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ABSTRACT

Presented are six papers originally delivered at a colloquium series on the problems of the learning disabled child, with emphasis on a multidisciplinary perspective. In "One Psychologist's Perspective on Learning Disabilities," J. Kessler provides an overview of the field with sections on definition and identification, etiology, testing as a basis for educational therapy, hyperactivity, motivation, and the teacher's role. In a second paper titled "Learning Disabilities--A Neurologist's Perspective" S. Horowitz examines the problems of deprivation, mental retardation, specific reading disabilities, minimal brain dysfunction, and poor education. The effectiveness of various educational programs is discussed in a paper titled "Learning Disabilities--The Educator's Perspective" by J. Jacobs. The music therapy program at the Cleveland Music School Settlement is described in "Learning Disabilities--A Music Therapist's Perspective" (A. Steele). In the paper titled "Children with Learning Disabilities--Perspective of a Reading Specialist" (R. Mueller), an historical picture of the attempts to identify reading failure causality is traced and successful remediation techniques are suggested. In a final paper, P. Del Calzo provides a speech pathologists' perspective to the problem of learning disabilities and language handicaps. (SBH)

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LEARNING DISABILITIES

An Interdisciplinary Perspective

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Proceedings From the Colloquium Series
of the Department of Education
Case Western Reserve University, 1973-1974

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EDITORS' PREFACE

The following papers were delivered at a colloquium series sponsored by the Department of Education, Case Western Reserve University during 1973-1974. The series represents an attempt to look at the problems of the learning disabled child from a multi-disciplinary perspective.

With the exception of one paper, that of Dr. Jane Kessler, all papers are presented in the order in which they were delivered. Dr. Kessler's article provides a most comprehensive overview of the entire field of learning disabilities and as such seemed to the editors to provide an excellent introduction to the monograph.

Although each of these papers represents the viewpoint of a separate discipline, that of neurology, psychology, special education, reading, music therapy, and speech pathology, a common thread seems to run through them all. The shared concern of all professionals is the difficulty of early and accurate differential diagnosis of the learning disabled (LD) child; and of even greater import, the implementation of appropriate procedures once the diagnosis has been made. Many of the authors further feel strong discomfort with the arbitrary cutoff point of an IQ of 80 which labels some children as retarded and some eligible for the special help provided for the learning disabled child.

Another concern examined in depth by several of the speakers is the historical dependence on perceptual motor coordination training as a teaching strategy for the child with learning disabilities. That these techniques might be helpful in motor activities or in more affective ways was not denied; but the need for longitudinal, carefully controlled research to validate any specific benefits in reading or other cognitive skills activities was strongly advocated.

These papers although theoretical in nature speak to us all, classroom teacher, parent, psychologist, speech therapist, physician and university faculty. The practical approaches will be of help to those who work every day with LD children. The tempering wisdom expressed by these authors, that it is folly to expect a simple solution to this many faceted problem, speaks to us all.

The editors of this monograph wish to thank Dr. Elyse Fleming, chairwoman of the Department of Education for her encouragement and support of these colloquia, the A.H.S. Foundation for its sponsorship of the series and this monograph, and Ms. Anne Miller and Susan L. Cash for their editorial assistance.

There is a need for people from different disciplines to talk to and with each other about the range and complexity of diagnostic, educational and clinical issues germaine to the child with learning disabilities. The editors hope that this series represents the beginning of many such cooperative efforts among these diverse professions.

Ruth H. Zollinger

Nancy K. Klein

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ONE PSYCHOLOGIST'S PERSPECTIVE ON LEARNING DISABILITIES

Jane W. Kessler

Overview.

This title was carefully chosen to indicate that the following discussion represents only the author's point of view because psychologists are not of one mind regarding the diagnosis of learning disability. Some history is in order to explain the present situation of confusion and uncertainty. Learning disability has replaced such descriptive terms as "underachievement" as well as disease categories such as "brain injury" and "minimal brain dysfunction." Underachievement was a popular term in the era of the 1950's and 1960's which emphasized motivational problems, family relationships, inhibitions and defenses against anxiety. The recommended treatments were usually psychotherapy, group or family counseling with little direction for educational personnel. At that time, "brain injury" was rarely diagnosed in children of normal intelligence unless other major neurological conditions such as cerebral palsy or seizure disorder were present. In an influential monograph on minimal cerebral dysfunction published by the National Institute of Neurological Diseases and Blindness, Clements (1966) spoke of "a growing dissatisfaction on the part of many medical workers with children with purely psychogenic and interpersonal explanations for any disorganized or poorly understood behavior" [p. 1] and stated that

> with our limited validated knowledge concerning relationships between brain and behavior, we must accept certain categories of deviant behavior, developmental dyscrasias, learning disabilities, and visual-motor irregularities as valid indices of brain dysfunctioning. They represent neurologic signs of a most meaningful kind and reflect disorganized central nervous system functioning at the highest level. [p. 9]

He listed 38 terms to be subsumed under the diagnosis of "minimal brain dysfunction."

The emphasis on organic factors led to specific educational therapies such as perceptual-motor training, language training, reduction of distraction as well as drug therapy. This movement coin-

cided with the rise of behavior therapy which offers techniques of treatment for symptoms (i.e., behavior) regardless of cause. Many educators questioned the distinction between the "emotionally disturbed" and the "neurologically handicapped" since they were more and more utilizing the same intervention strategies. There has been a growing tendency to combine both groups under the heading of "learning disability" which seems to be properly the business of the schools and to carry less stigma for all concerned. Learning disability has become a diagnosis used largely for educational purposes and children so labelled in the schools are heterogeneous, including those who are poor learners, those with specific educational handicaps, and those who are disruptive because of hyperactivity or poor impulse control. The establishment of *The Journal of Learning Disabilities* in 1968 attested to the popularity of the term, and by passing the Children with Specific Learning Disabilities Act of 1969, Congress added its official sanction to this category of exceptionality.

Definition and Identification.

In the federal legislation, the target population was defined as those children

> who have a disorder in one or more of the basic psychological processes involved in the understanding or in using language (spoken or written), which disorder may manifest itself in an imperfect ability to listen, think, read, write, spell, or do mathematical calculations. These disorders include such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental dysphasis. [p. 54]

In the first issue of the above-mentioned journal, Barsch (1968) states that learning disability is

> a term to be applied to any learner who fails to benefit from an existing curriculum into which he has been placed. Anytime an original assumption of capability to benefit from a curriculum is made, based upon tests or general educational judgment, and the learner fails, a learning disability is at work. [p. 13]

One quasi-official definition advanced by the Council for Exceptional Children reads as follows:

> A child with learning disabilities is one with adequate mental ability, sensory processes, and emotional stability, who has specific deficits in perceptual, integrative or expressive processes which severely impair learning efficiency.

These three examples will suffice to illustrate the inclusiveness of the term. The diagnostic process is more a question of ruling out alternative explanations than a question of positive determination. All standard definitions of learning disability state that mentally retarded children are excluded but there is no consensus as to the cut-off point for mental retardation. According to the latest classification system of the American Association on Mental Deficiency, the upper limit for "mild mental retardation" is a Stanford-Binet IQ of 68 or a Wechsler Intelligence Scale IQ of 70. There are many children in the 70 to 90 IQ range and these children are usually considered ineli-

gible for special educational resources for the "learning disabled" on the basis that they have a "less-than-average" mental ability. This exclusionary policy would suggest that a below average IQ score is a sufficient explanation for any learning problem, but in fact, children with the same mental age and IQ vary greatly in their academic proficiency. Achievement tests may be far below mental age expectancy and unevenness of performance is more the rule than the exception. Many of the mildly retarded youngsters have specific perceptual or language disabilities but without compensating strengths in other areas sufficient to raise their total IQ score to the average level. In times past, retarded children were automatically excluded from such special help as speech therapy in the schools, but fortunately this is no longer true. With the growing trend towards mainstreaming mildly retarded children, they will be more and more a part of the total school population — but still not eligible for "learning disability" resources. In this author's opinion, it is arbitrary and unjustified to assume that only children of average or better intelligence can have a learning disability. Therefore, I would take the position that the first step in establishing the diagnosis of learning disability is showing evidence that the child has not progressed academically as well as one would expect from mental age or IQ and I would consider the diagnosis as a possibility for children of all IQ levels.

One of the first definitions of the learning disability child was that he demonstrated a two-year lag in academic skills which meant that he was necessarily eight years or more in age. Others have taken a more generous definition of underachievement in terms of discrepancy between mental ability and achievement. For instance, Adams, Kocsis, and Estes (1974) defined their learning-disabled population as those with Myklebust Learning Quotients below 84. Of a total sample of 368 fourth graders, 139 or almost 38% were identified as "learning disabled," slightly more than the number identified as "normal." This illustrates the necessity to examine the assumptions underlying any statistical system of identifying underachievement. The Myklebust Learning Quotient is calculated by dividing an "Expectancy Age" (the sum of Mental Age, Chronological Age and Grade Level Age divided by 3) by the "Achieved Age" on achievement tests. This means that the average fourth grader, age 9 years, would be learning disabled if his achievement scores were 1.5 grade levels retarded, and the bright fourth grader (IQ 120) would be so identified if his achievement scores were 1.0 grade levels behind. Obviously this technique will identify more problem learners than the former two-year criterion. In Mykelbust's original presentation (1968), he recommended that a learning quotient below *90* be used as the basis for classification which of course would result in even greater numbers. It remains for educators to decide how close the

correspondence should be between achievement test scores and achievement scores predicted from mental age and chronological age; but by virtue of their criterion, they will find a predictable percentage of underachievers and a similar percentage of overachievers.

In general practice, however, the learning disabled child is identified on an individual basis because of a history of failure to learn so persistent that he is well into the second or third grade before there is any concern. By this time he has considerable experience with failure with resultant discouragement. This has led many people to explore the possibilities of early detection. One example is a developmental scale devised and investigated by Sapir (1967). Examination of 54 kindergarten children (ages 5-1 to 6-2) indicated that 18 were "developmentally deficient" 13 of whom were diagnosed by a neurologist as having "minimal cerebral dysfunction." Further, she found that the developmental differences persisted in the first grade and correlated significantly with academic performance a year and a half later. There was no report of IQ differences or differences in chronological age, a serious omission since her sample covered a spread of 13 months. Other attempts have been made to give the teacher a tool which can be used for early identification (Novack, Bonaventura, and Merenda, 1973) and all seem to agree with the conclusion of Haring and Ridgway (1967) that "individual behavior analysis done by teachers may prove to be a more effective procedure than group testing in identification" [p. 393]. However, there are dangers in early detection as pointed out in a very thorough review article by Keogh and Becker (1973). These authors state that

> on the basis of present evidence, it seems reasonable to conclude that relationships between single, specific preschool test findings and later school achievement are too low to allow definitive prediction about individual children. [p. 87]

Predictive validity is, of course, improved in those cases where severe disability is noted in preschool years. Keogh and Becker make the very important point that

> too often the major portion of time and funds are spent on extensive diagnosis and evaluation so that neither time nor money is left to modify educational programs in light of the identification data. It well may be that focus on effective educational programming *per se* is a more productive route than is the search for precise measures for early identification of individual children. [p. 10]

This author could not agree more. There is very little need for time-consuming screening procedures if teachers are sensitized to spot those children who are not learning; if they feel free to ask for help; and if constructive suggestions are forthcoming.

Etiology: functional or organic?

When a learning problem has been identified, the first question is usually one regarding the cause. Referring again to the definition of the Council for Exceptional Children, learning disability is

diagnosed when the child "has adequate emotional stability." This determination is a difficult task since all writers and observers agree that learning disabled children may well have secondary emotional problems as the result of failure experience, low self-esteem, and the like. It is presumed that in the case of a "real" learning disabled child, there was something different from the beginning which caused him conflict and grief. In some vague way, this is thought of as "organic." To quote Myklebust (1968),

> To have a learning disability is to have one of the conditions which lead to underachievement; there is a discrepancy between potential and actual success in learning. A learning disability, however, differs from other types of involvement in that the deficiency can be attributed to neurogenicity, to a dysfunction in the brain. [p. 4] [1]

The organic difference could be in any area of functioning such as visual or auditory perception, perceptual-motor coordination, spatial organization or temporal sequencing, intersensory integration, language reception or expression, conceptual thinking, memory, or impulse control and could be the result of "developmental lag" or "minimal brain dysfunction." It is then necessary to consider what might be the causes of such pernicious "lags" or "dysfunctions." In the NINDB monograph previously mentioned, Clements (1966) broadens the organic base to include all of heredity and also the effects of early sensory deprivation. This weakens the case for any clear-cut dichotomy in etiologic classification between "functional" and "organic." It implies, probably correctly, that fixation in development can occur from organic factors affecting central nervous system maturation or failure to learn in critical periods. Either route presents the same end result; probably the mode of interference is not as important as the timing. For instance, Provence and Lipton (1962) observed behavior in children who had been institutionalized in infancy which closely resembled behavior ascribed to "brain-damaged" children. In the final analysis, all behavior can be viewed as "organic" in that it depends on some biochemical activity in the central nervous system which probably will be defined in some scientific millenium. This will not in any way reduce the importance of external factors; it will only explain the internal mechanisms of their influence.

The usual alternative for organic explanations is to blame the parents. Conscientious, concerned parents are presumed to be immune to producing emotionally disturbed children. This may explain the demographic characteristics of those children identified as

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[1] Other authors have made different semantic distinctions. For instance, Frierson and Barbe (1967) suggested that "learning disorder might best designate a known impairment in the nervous system. Learning disability might best designate a demonstrated inability to perform a specific task normally found with the capability range of individuals of comparable mental ability." [p. 4]

"learning disabled."[2] As Rappaport (1969) has noted, the majority come from middle to upper-income families which is "probably a correlate to being well-informed and to having the finances necessary to seek professional help. It is not necessarily indicative of a lower incidence of brain dysfunction among low-income families" [p. 2]. However, it may also represent a prejudice on the part of diagnosticians who are all too ready to find the causes of all learning problems in cultural deprivation or social pathology. If the parents are divorced, poor or unstable, there is a tendency to look no further into the child's problems.

In fact, child development is a complicated process and there are many problems in which the parents have had only a secondary role but which are nonetheless "emotional." One should consider special vulnerabilities resulting from inborn differences and "primary reaction types" as described by Thomas, Chess, and Birch (1968). Events which are assimilated by one child are traumatic for another. A parent may respond more readily to one child than to another, for many reasons. Fortuitous outside events such as physical illnesses, family crises, disasters experienced vicariously by the child, experiences initiated by people outside the immediate family are also important in shaping behavior. Add to all of this the distorted perceptions and misunderstandings created by the primitive thinking and unspoken fantasies of the young child and the inevitability of inner conflict between contradictory drives or wishes with the mobilization of such defenses as projection, denial, reaction formation, and repression. With all that we know about the multiple causation of behavior (normal and abnormal), it is astonishing that we still deal with simple either-or choices. The alternative to an organic explanation is not poor parenting.

In the search for explanation, the educator turns to both the neurologist and the psychologist. Neurological considerations are reviewed elsewhere,[3] so only brief mention will be made of the issues involved. Studies of large samples have led to generally negative results. Kenny and Clemmens (1971) were unable to find any significant relationships among the neurological examination, electroencephalogram, and final diagnosis of 100 children suspected of minimal brain dysfunction. In the Adams, Kocsis, Estes study (1974) of the 139 fourth graders with learning quotients below *84*, only two[4] of the

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[2] Franks (1971) reported that 34.2% of children in EMR classes was Afro-American compared with 3.2% of children in LD classes.

[3] See paper by Dr. Samuel Horwitz in this volume. p. 23 [Ed.]

[4] These functions were difference in tapping speeds between the two hands and recognition of numbers drawn on the skin of the hand.

neurological functions tested were significantly different for the learning disabled group, and the combination of both conditions showed only 13.7% of the LD group and included none of the control children. These authors concluded

> it is apparent that 9 and 10 year old learning disabled children cannot be reliably distinguished from normally achieving children on the basis of the soft neurological signs outlined in this study. Thus, classroom observation and selected psychoeducational testing would appear the logical approach to identification of learning disabilities, at least for older elementary children. For the present, general physical examination and vision and hearing screening should constitute adequate initial medical evaluation for the large majority of school children with learning disorders. Obvious exceptions would be suspicion of seizure disorder or hyperkinesis that would merit special pediatric or neurological consultation. [p. 618]

Combining these findings on learning disabled children with the known fact that many children with clear-cut neurological difficulty (for instance, seizure disorder) have no learning problem led to the discontinuance of the label "Neurologically handicapped" for special education classes and the requirement of a neurological examination as part of the selection procedure.

On the other hand, psychological examination is still recommended practice. In the first place, an individual mental ability test is needed to determine the extent of underachievement. But, the teacher hopes for a great deal more than an IQ score. Historically, clinicians have hoped that psychological tests would indicate organicity and help to answer the etiologic question. In general, commonly used clinical tests have proven disappointing. There have been attempts to use the scatter on the subtests of the Wechsler Intelligence Scale for Children to find an "organic profile" but after review of published studies, Yates (1954) and Herbert (1964) concluded that such attempts have been unsuccessful.

In a thorough review of the studies using the WISC with retarded *readers*, Heinicke (1972) reported some consistency in that they performed lower on information, arithmetic, vocabulary, and digit span subtests, and higher on picture arrangement, block design, and object assembly. These results, however, do not fit the traditional expectation that "organic" children will have higher verbal than performance scores. The Heinicke summary suggests that poor readers have relatively poor verbal skills which could be cause or effect. In a study of 100 eight- and nine-year-olds with a Myklebust Learning Quotient below 90, McGrady and Olson (1970) found that the children with learning disabilities tended to perform more poorly on tasks which utilized verbal stimuli regardless of the psychosensory modality (i.e., visual versus auditory). The authors remark that their results support "the well-known finding that there is a strong verbal factor in academic achievement and success" [p. 588]. Stevens et al., (1967) compared 26 children assigned to the minimal brain dysfunction

category by a clinical evaluation with a control group of the same age, sex, and socioeconomic class distribution and found that "on the average, the children in the MBD group were poorer in every area of performance than were the children in the normal group" [p. 284]. The WISC results indicated a significant advantage for the normals in the Verbal IQ (mean IQ of 114 compared with 103 in the MBD group) with a subtest scatter similar to that reported in the Heinicke summary.

It may be helpful to the teacher to know that a given child has a relatively limited comprehension vocabulary since this might restrict his interest in reading or his ability to guess from context, but it does not explain the reason for this deficiency. After his review of the research, Heulsman (1970) concluded that "research should be directed toward defining the possible significance of difference in WISC (subtest) scores rather than toward pattern identification, which seems relatively useless..." [p. 549].

Another popular test is the Bender Gestalt which consists of a series of geometric figures to be copied. Koppitz (1962) devised a scoring system intended to differentiate brain injury in children. In a large scale study the Bender Gestalt was administered to 384 public school children, aged 5 to 10 years, of which 103 were diagnosed as brain damaged but with no serious physical, motor or mental retardation. The total Bender scores differentiated significantly between the two groups; most brain-damaged subjects did poorly and good Bender records were rare among the brain-damaged subjects.

Testing as a Basis for Educational Therapy.

Slowly, psychologists and educators came to the conclusion that it was not crucial to decide if the child has an "organic" problem as such, and both looked to tests which would be diagnostic in a different sense. Put simply, the teacher wanted information which would be useful in the instructional process and new tests were designed with the aim of pinpointing specific deficits. One such test is the Illinois Test of Psycholinguistic Abilities, Kirk and Kirk (1971). This diagnostic instrument was designed to measure specific functions of psycholinguistic behavior and to provide a framework for the amelioration of language disorders. Unfortunately, however, the psychological processes identified by the ITPA do not translate easily into educational recommendations. Very few teachers know what to do with a child who is reported to have a "deficit in auditory sequencing," and there is little evidence to indicate that intervention based on ITPA profiles is effective. Hammill and Larsen (1974) reviewed 38 studies which used the ITPA or one or more of its subtests as the criterion for improvement. The collective results suggest that the idea that psycholinguistic constructs can be trained by existing techniques remains nonvalidated. The most favorable results related

to training of expressive, representational processes. These authors make the additional observation that recent findings are considerably less encouraging than those reported in the earlier research. This is an all-too-common occurrence. There are at least two reasons for special treatment methods to fail to live up to their original promise. First, in the original studies, the participants may be highly motivated and exerting extra efforts which are not sustained in replication studies. Second, there is always a tendency to over-generalize and to apply the special methods to more diverse populations.

Another test was Frostig's Developmental Test of Visual Perception which was accompanied by teaching materials (Frostig, 1967). These materials, which look much like standard pre-reading exercises, have doubtless been useful up to a point; but children who have mastered these tasks may continue to have learning difficulties at the next higher academic level (Mann, 1970). One might question the relevance of perceptual training for reading in view of the general success of poor readers on WISC visual-motor subtests. Sapir (1971) compared 12 first grade children placed in a "deficit-centered educational program" with 6 children who were "mainstreamed," and found that more growth took place intellectually, perceptually and in language skills in the experimental group than in the control group, but that this was not reflected in better academic performance — at least not within the time span of the research investigation. Although Sapir interpreted her results as casting doubt on the value of the segregated class and the deficit-centered methodology, it may be that they expected academic results too quickly. Special educators, however, seem to be questioning more and more the relevance of training of specific perceptual-motor or language impairments for achieving academic success (Quay, 1973).

The current trend is toward more direct approaches in special education, analyzing the academic task to be mastered and offering direct instruction in either the terminal behavior or its close antecedents. In her criticism of the psychologist's role in the evaluation of exceptional children, Keogh (1972) pleads for some radical changes. She urges that psychologists report on qualitative aspects of test performance, that they look for strengths which can be used to compensate for deficits, and that they also look at the teacher and teaching situation as well as the child. This is similar to Bersoff's (1971) plea that school psychologists employ a "psychosituational" approach and evaluate the child's performance in the classroom. This makes a lot of sense but there can be a problem of professional role confusion. The teacher expects the psychologist to evaluate the child, not her teaching! In any case, the mystique of tests may be fading at last; there is no simple key to unlock the learning process.

Hyperactivity and Learning Disability.

The original descriptions of "minimal brain dysfunction" in-

cluded hyperactivity as one of the major symptoms, but at the same time indicated that MBD children could be hypoactive, although with much less frequency. Werry (1972) sums up the relationship between hyperactivity (or hyperkinesis) and brain damage in the following statement:

> Studies of unequivocally brain-damaged children suggest that the hyperkinetic syndrome is neither a necessary nor very frequent occurrence after brain injury. Although there is no unanimity, the majority of studies suggest that the behavior disorder of the hyperkinetic syndrome is associated to a varying extent with certain paranatal, neurological, EEG, and cognitive abnormalities. The relationship between these variables, and indeed their very significance, is obscure, but they seem to be weakly suggestive of some kind of cerebral dysfunction, the nature of which is unclear but which may reflect a variety of causes ranging from frank brain damage through normal variation to adverse socio-familial experience. [p. 106]

Recently there has been considerable attention to a new kind of cause for hyperactivity, namely, food sensitivities. Campbell (1974) reviewed the literature related to central nervous system allergy and suggests that "minor allergens are the unsuspected villain in many obscure neuropsychiatric syndromes of unexplained etiology." [p. 824] Undoubtedly, this is an important factor in some cases; it is premature to judge whether it is relatively rare or relatively frequent. It is interesting to note how quickly something new captures widespread attention. In our eagerness for answers, it is difficult indeed to maintain a balanced point of view and put the varied causes in proper perspective.

Moving away from the category of minimal brain dysfunction to the broader one of learning disability, we find that perhaps half of the children so identified are also hyperactive. There is also an undetermined number of children who are hyperactive but not impaired in learning, at least by any criterion of underachievement. It has been estimated by the U.S. Federal Office of Child Development (1971) that three percent of elementary school children demonstrate enough traits (mild and severe) to be classified as "hyperkinetic," but no estimate is given as to the proportion of these who show concomitant learning disabilities. The two categories, hyperactivity and learning disability, overlap but are by no means the same.

Keogh (1971) undertook the task of examining possible explanations for the frequent association of learning disability and hyperactivity. She offered three hypotheses.

> Hypothesis 1 represents the medical-neurological syndrome explanation: Learning problems, distractibility, perceptual problems, and motor hyperactivity are perceived as caused by a common underlying condition, that is, neurological impairment.... Hypothesis 2 suggests that learning problems of hyperactive children are a result of increased motor activity which disrupts attention to task and thus prevents accurate intake of information. Hypothesis 3 suggests that learning problems of hyperactive children are a function of hasty, impulsive decisions in learning situations. [p. 104]

The first hypothesis is not very popular with psychologists or educa-

tors because it seems tautological and offers no leads for intervention.

The second hypothesis, which might be called the "attentional deficit syndrome," has been the basis of considerable research by Dykman, Ackerman, Clements and Peters (1971). In one such study, 82 boys with learning disabilities were contrasted with 34 academically adequate boys. Of the 82 with learning problems, 29 were judged to be hyperactive and 19 hypoactive. The experimental procedures included a variety of conditioning and impulsivity testing and physiological and EEG measures. They found that learning disability children made more errors in following instructions than controls, were slower in responding, and showed decreased physiological reactivity in learning situations. These authors explained the results in terms of *organically* based deficiencies in attention related to the brain-stem reticular formation and its antagonist, the forebrain inhibitory system, which are known to play important roles in attention and physiological excitation. However, they see the "organic" cause as a "lag in neurological maturation" and make the very important point that neural maturation depends to some degree on life experiences.

> The significant task is to develop educational programs that will help the presumably neurologically immature child develop to his full capacity with a minimum of frustration-induced anxiety. It is unlikely that this can be accomplished in a fixed age-grade system or indeed by any one technique of special education. More importantly, many of our present educational efforts may be misplaced if the most critical defect of learning-disability children is faulty attention. [1971, p. 89]

This research provides some information which is somewhat surprising, namely, that learning disability children (including those who are also hyperactive) are *slower* in responding than normal control subjects. Other studies have confirmed this finding (McGrady and Olson, 1970). Dykman et al., (1971) explain the slowness on the basis of distractibility which interferes with ability to attend continuously. Such research results would appear to refute Keogh's third hypothesis that the learning problems of hyperactive children are a function of "hasty" decisions. This is a finding of potential significance to teachers because it would suggest that they should speak more slowly, repeat their instructions and not be deceived by the apparent quickness of the typical hyperactive child.

It is in order to make a brief comment about the use of drugs in alleviating the symptoms associated with hyperactivity. The advocacy of drug treatment has grown out of numerous clinical reports which consistently maintain that stimulant drugs produce positive and sometimes dramatic effects with problem children (Sulzbacher, 1973; Sroufe, 1973; Werry and Sprague, 1970 and Wender, 1971). Stimulant drugs seem to have a "paradoxical effect" on hyperactive children. While stimulants produce activating and euphoric effects on adults, these same drugs have a quieting effect on hyperactive

children. This observation has lent support to the idea of hyperactivity as a unique syndrome with the implication that hyperactive children are physiologically different from their normal age-mates. The notion of a paradoxical effect, however, has not gone unchallenged. After a comprehensive review of the research, Sroufe (1973) points out that stimulant drugs do not sedate hyperactive children but improve concentration, vigilance, and attitude just as they do with adults. Grinspoon and Singer (1973) comment on evidence that even for those children who initially seem to profit from medication, long-term benefits may be insignificant. In two follow-up studies of hyperactive children (many treated with amphetamines), some 75% were still having serious difficulties with school work in adolescence (Minde et al., 1972). In those instances where drugs help in behavior control, there is no guarantee that this will produce academic success.

Motivation and Learning Disability.

There has been surprisingly little written about the role played by motivation in learning disorders, probably because a learning disability is presumed to be involuntary. There is one study, however, of great interest in this connection. Freibergs and Douglas (1969) contrasted the performance of 65 hyperactive and 99 control subjects of elementary school age in concept learning. Briefly, the only significant difference was in the condition of partial reinforcement (when every second correct response was reinforced). The authors describe the extreme frustration experienced by the learning disabled children when no reinforcement was given.

> Some children clearly abandoned any attempts at rational solution, saying 'the rule changes all the time,' or 'there is no rule.' A few others claimed they had the 'right answer,' despite the absence of confirmation. [1969, pg. 394]

Clearly, the hyperactive children found the situation of "no response" acutely painful and resorted to various mechanisms of denial and avoidance. One could say that this was a reaction to past experiences of school failure, but it is also possible that these children had a low tolerance for frustration *before* they started to fail in school. In either case, there are obvious implications for teachers. Hyperactive, learning disabled children need more consistent, positive reinforcement to "keep going" than their normal-functioning age-mates.

Success has been reported in using behavior modification techniques. One of the earliest reports involved a 10-year-old hyperactive, mildly retarded boy with unequivocal neurological findings, as well as a history of many foster placements. A conditioning procedure was developed using candy rewards for each ten-second period in which he did not display any non-attending behavior. Patterson, Jones, Whittier, and Wright (1965) reported behavior changes which "offer strong support for the efficacy of behavior modification techniques for the control of the hyperactive child" [p. 224]. A more

recent study involving group procedures was reported by Toffler (1972). He found that the hyperactive children with abnormal EEG tracings showed more decrease in hyperactivity and increase in overall classroom performance as compared with hyperactive children with normal EEG's even though they also showed marked improvement. These reports support the thesis that even children with "organic" findings are susceptible to psychological management. It remains for some future investigator to compare the efficacy of behavior modification techniques with drug management.

There has also been relatively little written about the dynamics of families with a learning disabled child because of the tacit assumption that the basic difficulty lies within the child. However, cognitive and emotional development interact with one another and both are at least somewhat dependent on the external environment. Zubin (1971) feels that the emotional disturbance starts early — even before the child enters school — as the result of the child's difficulties in early mastery and the negative feedback from parents who are disappointed and disapproving.

> The exposure of the child to negative feedback prolongs the child's dependency on the evaluative reactions of significant figures around him and interferes with his development of independence of thought and action. This prolongation of dependence is seen to be associated with a resultant oversensitivity to self-evaluation and to retention of the immature need to project responsibility for failure as a self-protective mechanism against failure. . . . (this) impairs the child's motivation to persist on tasks and to engage in normal routine practice of skills. [p. 184]

Thus, Zubin would say that the learning disabled child enters school with a special need for continuous, positive reinforcement. However, we have very little direct information about parental practices and attitudes in the pre-school years. At least in some cases, it seems that the parents were quite unconcerned before the child started school and quite possibly erred on the side of not expecting enough rather than expecting too much.

In the follow-up study of Minde et al., (1972) which was cited before, they found a relationship between "poor outcome" and family difficulties and conclude

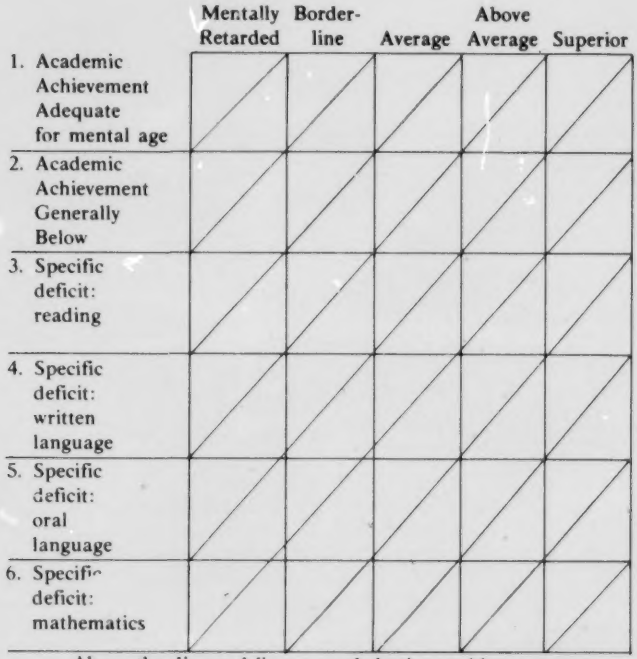
> that children do change their families psychologically. The 'poor outcome' group made their families generally worse and had a negative effect on parent child-rearing practices as well as on the emotional climate in the home. [p. 609]

One could well ask, however, which was cause and which was effect.

Summing-Up

Much has been written on the subject of learning disabilities and more is surely to come. In the meantime we are all faced with the necessity of using the presently available facts to help children with learning problems as best we can. These facts do not make a

coherent whole because the label "learning disability" has been given to children with such heterogenous problems that they have little in common. It is imperative that any child, or population, so labelled be further defined in terms of specific characteristics. The diagram below is offered as one way to tabulate the varied problems which children present in the school learning situation.



Above the diagonal line — no behavior problem
Below the diagonal line — hyperactive, disruptive, distractible

Theoretically all children could have a place on this grid but the children with whom we are concerned would fall mainly to the left of the mid-line, in the levels 2. through 5. and below the diagonal line in each cell.

Considering how far the label of learning disability has been stretched, one must question its continuing usefulness. Much has been made of its value to parents:

> To diagnose the learning disability and to interpret the problem to the parents is the first and perhaps most essential aspect of treatment. The family often is relieved simply to learn that the child's disorder has a name and that it perhaps might be alleviated with remediation. [Connolly, 1971, p. 171]

Books for parents present a benign and encouraging picture, empha-

sizing that the learning disabled is neither mentally retarded nor emotionally disturbed.

Most of these boys and girls have the potential to lead fulfilling, productive lives. They are intellectually competent youngsters. With skilled and compassionate handling by parents and professionals, most of them can overcome much or all of their handicaps. [Brutten, Richardson, Mangel, 1973, p. 11][5]

Also, the fact that the cause is presumed to be organic alleviates the parents' feeling of guilt and they can turn their energies into seeking outside help, usually from the school. It is little wonder that worried parents would be cheered by this diagnostic label.

Another value to labelling is in providing access to specially funded resources, such as special classes. Gardner (1973) feels that this is usually the course to follow.

Many children with minimal brain dysfunction suffer unnecessary feelings of low self-worth because they consider themselves to be the only ones with their deficiencies. Such feelings can be alleviated when the child is placed in a class with others with similar deficits. Many hold the view that the child with brain dysfunction does best in a class with non-organic children, but that he should be taken out for special tutoring. I believe that such an approach is valid only for the child whose brain dysfunction is so minimal that he would not be recognized as being different by his peers. [p. 252]

This brings us to the all-important point of what the label means to the individual directly affected, i.e. the child. Whether he is in a "different" class or "different" within a regular class, it is important that he have some realistic explanation. Gardner encourages an open discussion about minimal brain dysfunction with the following caution:

It is important, when discussing the child's disorder with him, to invite questions so that any distortions he may have can be rectified. Many of these children equate brain dysfunction with insanity or retardation; others consider themselves totally useless because of their isolated defects. If these misconceptions are not corrected, the child may continue to deny his illness. [p. 235]

There is a very real problem, however, in trying to correct "misconceptions" because the so-called "disease" is so nebulous that it leaves room for almost any fantasy. Very few people have any concept of how the brain structures work and think of the brain as a single organ which is either "all right" or "broken."

If one does get the idea across of a brain difference, there is the problem of defining individual responsibility. Whose fault was it? And whose fault is it now if the child does not do well or gets into trouble? Brutten et al., (1973) tell parents that

much of what the learning disabled child does is not willful or intentional on his part. He is not in control of his behavior or his inadequate learning performance. His

[5] The few facts we have from follow-up studies are not quite so encouraging. Koppitz (1971) found that some 43% of learning disabled children remained in special classes in a five-year follow-up study.

physiological impairment seems to 'short-circuit' what would be normal behavior and learning. [p. 4]

This can be very well used as a rationalization for any and all behavior and allows a child to think of himself as an exception to all the usual rules. Gardner discusses this defense and the importance of differentiating which symptoms are manifestations of the neurological impairment and which are psychogenic, adding the surprising statement that "all psychogenic symptoms are considered to be under conscious control to some degree, unless strongly proved otherwise (a rare situation)." [p. 254] This is surprising because those of us who have worked with emotionally disturbed children in psychotherapy know that psychogenic symptoms are usually *not* under conscious control!

In the author's opinion, it is better to explain the "brain difference" in terms of the concept that everyone is born different. For instance, some have musical ability, artistic ability, athletic ability or whatever, and others have to work much harder to accomplish less. These differences are not fair in that there is no direct correlation between effort and achievement as it is judged by the outside world. Only the individual person knows what he wants to accomplish and how much it costs him to do so. It is inevitably a lonely and frustrating experience. An 18-year-old girl, about to graduate from high school, described it well:

People say I worry a lot and yet they do not know how hard I have to work in order to keep up with them. I probably work twice as hard at one thing and twice as long as it takes them to do it, at least this is the way I feel. Not only do I spend a lot of time and energy but if something goes wrong, then I just feel even more discouraged. To keep this motivation and ambition up at the rate I am doing is quite hard and I do not seem to be getting the backing I usually got from the teachers. In fact, I still wonder sometimes if it is worth it for my parents to spend so much money on education when I just learn about three-fourths of it. For all of my time and effort, I wish I got a lot more out of it. I am totally exhausted by the time I get home. It is a miracle if I do not cut down my parents, complain and criticize. The reason why I pick on my parents is because it seems to me that they are the only ones who understand what I seem to have to go through. This makes them the nearest target and the hardest. For they understand what I go through and yet I pick on them. I try to plan fun things for myself but by the time I am done with all the crap I have to do, I do not have the time or the energy.

The Role of the Teacher.

Everyone, parent, child and other professionals, looks to the teacher for the solution. The following list of do's and don'ts may help define the teacher's role in realistic terms.

1. With regard to diagnosis, DO describe the presenting problems accurately and fully; DO look behind the symptom to see if there are specific deficits in perceptual-motor or language functions; DO look for strengths which can be used to circumvent the deficit areas. DO NOT expect psychological tests or other consulta-

tions to tell you anything very new; they may confirm something you had already suspected.

2. With regard to treatment, DO keep in mind the observations that learning disabled children seem to have slower responses than normal-learning children and a greater need for continuous positive reinforcement. The learning disabled child needs a much closer relationship with his teacher than most children and this dependency can be something of an emotional drain on a teacher. DO NOT forget the parents; they sometimes require as much help as the disabled child himself and they need the same kind of positive feedback. DO use outside help, particularly in conjunction with the family problems. There is a tendency to look for consultation in diagnosis but to overlook the possibilities for outside treatment to be combined with special education. Certain problems do not belong in school and the child can be encouraged to discuss some of his problems and feelings in another setting.

3. DO keep in mind that many of the children identified as learning disabled also need help in their relationships with peers. In fact, for many of these children, they suffer more from lack of friends than from lack of academic success. Studies have indicated that the social maturity scores of learning-disabled children are inferior to scores of the general population of youngsters (Myklebust and Boshes, 1960). It is doubtful that their social difficulties are simply the result of school failure; it is more likely that the academic problems and the social difficulties are both the result of the child's low tolerance for frustration and inability to find and attend to the critical cues in a problem situation. Therefore, it is imperative that the special teacher be sensitive to peer relationships and facilitate friendships and peer-related behavior.

4. DO watch your own motivation in helping children with problems. Teachers need to succeed as much as children and it is easy to develop a rescue fantasy which can lead to a denial of the child's continuing problems or rejection of the child who does not respond well. The teacher has a powerful role as a facilitator — she organizes the learning environment, determines the tasks, simplifies and orders the presentation of the material to be mastered, and serves as a model, a reinforcer, and a releaser of intrinsic motives. But she, or he, must never lose sight of the feelings of the person with a learning disability. It is that person who carries the weight and basically has to "find the cure."

5. Finally, DO keep reading, listening, and observing with an open mind. There will be no simple causes or cures to fit all the children identified as learning disabled but some observations and therapies will fit *some* children. One also has to have a high tolerance for ambiguity and be able to recognize what is unknown and poorly understood or there is a temptation to foreclose on very

limited knowledge. Despite all the evidence to the contrary, we seem to proceed as if there were such a "thing" as a learning disabled child because we all have a need for certainty — not to know why or what to do is intolerable.

The beautiful part of special education is the opportunity it provides to know a few children well and to offer oneself as a concerned, caring partner in the struggle for mastery.

References

Adams, R. M., Kocsis, J. J., & Estes, R. E. Soft neurological signs in learning-disabled children and controls. *American Journal of Diseases of Children*, 1974, *128*, 614-618.

Barsch, R. H. Perspectives on learning disabilities: The vectors of a new convergence. *Journal of Learning Disabilities*, 1968, *I*(1), 1-15.

Bersoff, D. N. 'Current functioning' myth: An over-looked fallacy in psychological assessment. *Journal of Consulting and Clinical Psychology*, 1971, *37*(3), 391-393.

Brutten, M., Richardson, S., & Mangel, C. *Something's wrong with my child*. New York: Harcourt Brace Jovanovich, Inc., 1973.

Campbell, M. B. Neurological and psychiatric aspects of allergy. *Otolaryngologic Clinics of North America*, 1974, *7*(3), 805-825.

Clements, S. *Minimal brain dysfunction in children*. NINDB Monograph #3. Washington, D.C.: U.S. Public Health Service, 1966.

Connolly, C. Social and emotional factors in learning disabilities. In H. R. Myklebust (Ed.), *Progress in Learning Disabilities*, Vol. II New York: Grune and Stratton, 1971.

Dykman, R. A., Ackerman, P. T., Clements, S. D., & Peters, J. E. Specific learning disabilities: An attentional deficit syndrome. In H. R. Myklebust (Ed.), *Progress in Learning Disabilities*, Vol. II. New York: Grune and Stratton, 1971.

Franks, D. J. Ethnic and social status characteristics of children in EMR and LD classes. *Exceptional Children*, 1971, *37*(7), 537-538.

Freibergs, V. & Douglas, V. I. Concept learning in hyperactive and normal children. *Journal of Abnormal Psychology*, 1969, *74*(3), 388-396.

Frierson, E. C. & Barbe, W. B. *Educating children with learning disabilities.* New York: Appleton-Century-Crofts, 1967.

Frostig, M. Testing as a basis for educational therapy. *Journal of Special Education,* 1967, *2,* 15-34.

Gardner, R. A. Psychotherapy of the psychogenic problems secondary to minimal brain dysfunction. *International Journal of Child Psychotherapy,* 1973, *2*(2), 224-256.

Grinspoon, L. & Singer, S. Amphetamines in the treatment of hyperkinetic children. *Harvard Educational Review,* 1973, *43,* 515-555.

Hammill, D. D. & Larsen, S. C. The effectiveness of psycholinguistic training. *Exceptional Children,* 1974, *41*(1), 5-16.

Novack, H. S., Bonaventura, E., & Merenda, P. F. A Scale for early detection of children with learning problems. *Exceptional Children,* 1973, *40*(2), 98-107.

Petterson, G. R., Jones, R., Whittier, J., & Wright, M. A. A behavior modification technique for the hyperactive child. *Behavior Research and Therapy,* 1965, *2,* 217-226.

Provence, S. & Lipton, R. C. *Infants in institutions.* New York: International Universities Press, Inc., 1962.

Quay, H. C. Special Education: Assumptions, techniques, and evaluative criteria. *Exceptional Children,* 1973, *40*(3), 165-170.

Rappaport, S. R. *Public education for children with brain dysfunction.* Syracuse: Syracuse University Press, 1969.

Sapir, S. G. & Wilson, B. A developmental scale to assist in the prevention of learning disability. *Educational and psychological measurement,* 1967, *27,* 1061-1068.

Sapir, S. G. Learning disability and deficit centered classroom training. In J. Hellmuth (Ed.), *Cognitive studies,* Vol. 2. *Deficits in cognition.* New York: Brunner/Mazel, 1971.

Sroufe, L. A. Drug treatment of children with behavior problems. In F. Horowitz (Ed.), *Child development research,* Vol. 4, 1973.

Stevens, D. A., Boydstun, J. A., Dykman, R. A., Peterson, J. E., & Sinton, D. W. Presumed minimal brain dysfunction in children. *Archives of general psychiatry,* 1967, *16*(3), 281-286.

Sulzbacher, S. I. Psychotropic medication with children: An evaluation of procedural biases in results of reported studies. *Pediatrics,* 1973, *51,* 513-517.

Thomas, A., Chess, S., & Birch, H. *Temperamental and behavior disorders in children.* New York: New York University Press, 1968.

Toffler, A. E. The effect of intervention on children classified as minimal brain damaged by psychological testing which has been confirmed or disconfirmed by EEG evaluation. *Dissertation abstracts international,* 1972 (Apr.), *32*(10-B), 6062-6063.

Wender, P. H. *Minimal brain dysfunction in children.* New York: John Wiley, 1971.

Werry, J. S. Organic factors in childhood psychopathology. In H. C. Quay and John W. Werry (Ed.), *Psychopathological disorders of childhood.* New York: John Wiley and Sons, Inc., 1972.

Werry, J. S. & Sprague, R. L. Hyperactivity. In C. G. Costello (Ed.), *Symptoms of psychopathology.* New York: John Wiley, 1970.

Haring, N. G. & Ridgway, R. W. Early identification of children with learning disabilities. *Exceptional Children,* 1967, *6,* 387-395.

Heinicke, C. Learning disturbance in children. In B. B. Wolman (Ed.), *Manual of child psychopathology.* New York: McGraw-Hill, 1972.

Herbert, M. The concept and testing of brain-damage in children: A review. *Journal of Child Psychology and Psychiatry,* 1964, *5*(3/4), 197-216.

Huelsman, C. G. The WISC subtest syndrome for disabled readers. *Perceptual and motor skills,* 1970, *30,* 535-550.

Kenny, T. J., Clemmens, R. L., Hudson, B. W., et al. Characteristics of children referred because of hyperactivity. *Journal of Pediatrics,* 1971, *79,* 618-622.

Keogh, B. K. Hyperactivity and learning disorders: Review and speculation. *Exceptional Children,* 1971, *38*(2), 101-111.

Keogh, B. K. Psychological evaluation of exceptional children: Old hangups and new directions. *Journal of School Psychology,* 1972, *10*(2), 141-145.

Keogh, B. & Becker, L. D. Early detection of learning problems: Questions, cautions, and guidelines. *Exceptional Children,* 1973, *40*(1), 5-13.

Kirk, S. A. & Kirk, W. D. *Psycholinguistic learning disabilities: Diagnosis and remediation.* Urbana: University of Illinois Press, 1971.

Koppitz, E. M. Diagnosing brain damage in young children with the Bender-Gestalt Test. *Journal of Consulting Psychology*, 1962, *26*, 541-546.

Koppitz, E. M. *Children with learning disabilities: a five-year follow-up study*. New York: Grune and Stratton, 1971.

Mann, L. Perceptual training: Misdirections and redirections. *American Journal of Orthopsychiatry*, 1970, *40*(1), 30-39.

Martin, E., LaVor, M., Bryan, T., & Scheflin, R. P.L. 91-230. The Elementary and Secondary Act Amendments of 1969: Title VI, The Education of the Handicapped Act. Law review in *Exceptional Children*, 1970, *37*(1), 53-56.

McGrady, H. J., Jr. & Olson, D. A. Visual and auditory learning processes in normal children and children with specific learning disabilities. *Exceptional Children*, 1970, *36*(8), 581-591.

Minde, K., Weiss, G. & Mendelson, N. A 5-year follow-up study of 91 hyperactive school children. *Journal of Child Psychiatry*, 1972, *11*(3), 595-611.

Myklebust, H. R. (Ed.). Learning disabilities: Definition and overview. *Progression in learning disabilities*, Vol. I. New York: Grune and Stratton, 1968, 1-15.

Myklebust, H. R. & Boshes, B. Psychoneurological learning disorders in children. *Archives of Pediatrics*, 1960, *77*(6), 247-256.

Yates, A. J. The validity of some psychological tests of brain damage. *Psychological Bulletin*, 1954, *51*, 359-379.

Zubin, E. A. Cognitive dysfunction and emotional disorders. In H. R. Myklebust (Ed.), *Progress in learning disabilities*, Vol. II. New York: Grune and Stratton, 1971.

LEARNING DISABILITIES — A NEUROLOGIST'S PERSPECTIVE

Samuel J. Horwitz

A growing interest in the learning disabled child has led to a feeling in some circles that the one man who is supposed to understand how the brain works in these children, define the problem, prescribe its remediation and tell the world what to do, is the neurologist. I want to give you some kind of viewpoint or perspective on what we as neurologists can and cannot do, as well as define the current state of the neurologic art in the United States.

Pediatric neurology as a defined specialty in the United States is, for practical purposes, 15 years old. Neurological care of both children and adults prior to that time was carried out largely by neurologists, few of whom had training in both specialties. Finally, a few wise men decided it was time to train physicians in both disciplines; and with the help of granting from the federal government, this program was established. Today, there are about 250 pediatric neurologists in the United States.

Historically, the field of neurology has moved through a series of interesting phases. Beginning in the 1800's British and French interest in learning how the brain works led to large public demonstrations of hypnotism as well as the early beginnings of neuropathology. The 1800's also witnessed the era of phrenology. Phrenologists believed that by drawing a map of the skull they could designate areas responsible for certain functions of the brain: one area was for speech; one for vision; and another perception.

With the advent of Sigmund Freud and others, phrenology was supplanted by psychiatry. (Freud was a neurologist, by the way — Most people don't realize that — and a good one, too.) From that point on, we entered into the psychiatric era and the accompanying development of psychological testing. The majority of the neurologists became neuro-psychiatrists with much of their training in psychiatry and not in neurology. In the United States, neurology practically died between the First and Second World Wars. There were a

few people in academic institutions who did specialize in neurology; but too often, neurology was the afterthought of psychiatry. It is only in the last 30 years that neurology has again become a specialty in its own right. The major focus of this new field was devoted to the understanding of diseases like stroke and multiple sclerosis. Little attention was given to how the brain worked in terms of learning, vision, hearing — the "ordinary" things we do each day.

I think in some ways, neurologists recently got shoved in a corner by the educators, psychologists, and others who started talking about brain functions that they "knew" about, that we didn't know about. And so, neurologists began to study the processes of learning, vision, and hearing; and now, there is a most healthy marriage of educational psychologists, educators, neurologists and psycho-biologists trying to work at how we really do function. I make a point of this because if you read the literature, particularly the non-medical literature, you can frequently find articles that seem to give you very logical, very practical, very well thought out instances of how the brain works; what the defect is in a given child; and therefore, the remediation. Should you read these articles without too much basic knowledge, you would feel these models are absolutely perfect. You could, therefore, see why X's method from some prestigious university is *the* way to correct the child's defect.

I am sometimes led to believe I know less about "dominance" than practically anybody in education! When we must define dominance prior to brain surgery, it is a difficult task. If you operate on the dominant hemisphere, you may lose your speech. And thus, to really test what dominance is, you've got to go to great lengths diagnostically. It is not as easy as, say, "Look at your mommy through the telescope," or "Kick the football."

We have had to come back to study carefully which anatomic areas of the brain deal more specifically with certain functions. The brain isn't just an undifferentiated conglomerate of tissue. It is very specifically designed. While we recognize that certain parts are predominant for specific functions, it is nevertheless, a highly integrated system, with pathways that cross-connect. You cannot isolate portions and expect an area to perform a single function. For example, if you just go to pick up a little object, it may seem like one simple act — pick up the object. It is not that simple at all. First you have to view the object, by turning your head towards it. Then you have to send a message that will move your hand towards it; and yet, at the same time, stop your hand from overshooting it. It's a two-way system where you have got to sense what message is coming in and what message has to go out. You are using a number of complicated circuits, and if you take one out of the system, anywhere along the line, you can realize that you are going to have trouble. If you take out the vision, you will have to feel around to find the object;

diminish the sensation, and you are unable to tell exactly what you are feeling, or where your hand is.

One may then get the naive idea that we can generally define these defects accurately by a neurological examination and thus, surely instruct the educator or the physical therapist what to do for remediation. Or, in dealing with a child who is having problems in learning, you could hopefully come up with the concept that we can diagnose the area of damage. Most people imply rather often that there is damage if children are not learning properly; and they assume once you recognize where it is and what it is, you can train the brain to do the right thing. You may assume that some innovative, intelligent, and knowledgeable individual can therefore derive a well-planned system that can teach nature to overcome a defect, and correct the learning disability. Our present state of knowledge does not generally allow us this expertise.

We know only some of the processes and generally only incompletely. For example, assuming an individual is naturally right handed, the left hemisphere of the brain is then dominant for speech. If you surgically remove the left temporal lobe of the patient, the result may be certain defects in speech. You may conclude that the left side is *the* dominant hemisphere. Thus, a little damage there may lead to trouble in the discrimination of speech — the individual cannot quite understand what people are telling him. But what functions are in the right temporal lobe? Many people seem to consider that the other half of the brain is there as a book end merely to occupy space, so the left side does not stay lonely! However, right temporal lobectomy leads to some interesting problems. Although the left is the "talking-doing" hemisphere, the right hemisphere appears to recognize music much better than the left. The person who has lost the right hemisphere may not recognize people's faces.

The right side of the brain is also very important in learning. Whereas, you know the left side is dominant for speech and therefore, for reading, in fact, it is the other side, the right hemisphere, which is most important in the construction of geometric design. A person who has damage in the right hemisphere might be able to read, but be impaired in drawing. This is so complicated that it is not possible to claim one can design a specific input to overcome the deficit. This has very important educational implications.

The next concept of brain function to be considered is the often proposed idea that you can retrain the brain and that you can change its malfunction. An adult who suffers an injury or a disease of the brain may lose certain functions. For example, the unfortunate older person with a stroke. Immediately following the stroke, in the hospital, it is generally expected he needs a physical therapist, a speech therapist, and all the other good rehabilitation specialists. What if we "neglect" him? What if we suddenly run out of

"experts" in the hospital? In fact, the person will frequently recover to a very considerable degree without the help of any therapists, because recovery depends mainly on the extent and severity of damage. Therefore if a large amount of injured tissue has been partially "knocked out," "concussed," some function will eventually return in this tissue. However, dead tissue is dead tissue; it never functions again, cannot come alive again. The brain never really regenerates dead cells. That is absolute and as far as one can determine from biological phenomena, the brain of mankind will not ever regrow itself.

Physical therapists, speech and occupational therapists do, in fact, help the patient's recovery by encouraging him or her to use the recovering brain cells, and by teaching the individual to use substitute functions. Compensation for deficits and maximum use of those cells that survive and recover is the main achievement of therapy.

So, do you "retrain" people, by opening new pathways? Can you use other parts of the brain? There is some evidence that before the age of six or seven years, children indeed have a certain degree of ability to switch functional sites in the brain. Therefore, the child under the age of six, who has a stroke, (a not uncommon event in childhood) which damages his speech center may, after a couple of weeks even without any therapy, start talking again; and most of them will talk again, if not normally, very close to that. Yet, if that same phenomenon occurs at 12 years and the stroke is severe, the child may never recover useful speech. He may be, in fact, virtually mute. The recovery powers are better in younger children. That is relative, however, in certain functions and it is not absolute. Take, for example, the child with cerebral palsy who has had a birth injury on one side, or was born with a birth defect on one side of the brain. He may get the most expensive and elaborate therapy at the best rehabilitation center. At age one, he has cerebral palsy. At age six, he has cerebral palsy; and at age sixty, he will still have cerebral palsy. No matter how much therapy he receives, you will only help him to use his limited brain function to the best capability; but the defects he has will remain.

You cannot by any form of therapy "regraft" one piece of brain; nor can the remainder of the healthy tissue be made to take up the slack, as is implied by many experts. In the study of the therapy of brain injured children, one can find so many different methods, each one sort of implying, "I am the true Messiah." If that *were* true, we would have but one method. So, it is unfortunate that we have to recognize that most deficits in brain are deficits in brain. You cannot bulldoze through and make a new road; you may have to circumvent and use some other method to approach the situation.

Another problem that is very evident is the implication in recent years that the majority of children with learning problems are

brain damaged. Damage means structural injury to tissue. Going back about 20-30 years or more, children with learning difficulties were "problem children," "bad kids," "dropouts," "emotionally disturbed." For those who are educators, there is one word that we still hear far too often — and that is, "immature." There is perhaps no more unfortunate term that ever crept into educational language because it is undefined (often a means to postpone another year without providing remedial help for any problem child). What does immature mean? Is it babyish? Clinging to mother's apron? Every speech defect and every learning defect and every behavioral problem may be explained as immaturity. How many retarded children are called "immature" before someone identifies what the problem is? Educators who drop this word from their classroom vocabulary would do society a favor.

Following this era of the "bad kids" and "immature kids," we suddenly came into that of "brain damage." There has been a proliferation of societies for the "brain damaged."

Then, when the term was "banned," we substituted "brain dysfunction," then went to "neurologically handicapped" and "NH class" and then we went to "learning disabilities class," "LD class."

Finally, people are saying, "Don't talk to me about learning disabilities, talk about learning problems." To which we should be replying, "Congratulations! You've come a long way, but you're absolutely right. It is a learning problem."

Educators should not be worried about the "damage" — that is not the concept the educators need to be dealing with. It is the problem that this child has in school that must concern both educators and physicians. The question to be answered is this: What does a neurologist do? What can he achieve here?

The neurologist's role is mainly that of evaluating whether a disease process is indeed present; whether drug treatment is likely to be needed or helpful. The recognition of a neurologic deficit may aid the educator in understanding the basis of the child's problems. Nevertheless, the physician should not be placed in the role of decision maker in regard to class placement or type or extent of remedial education. That must remain the responsibility of those in the educational system. It should also be clear that physicians cannot be placed in a position that requires them to be the policeman of the special educator.

Next, we must determine: How do we view the child who has difficulty with learning?

The emphasis in the past has often been to look at the child's defects. Therefore, the neurologist's role has been defined as the one who determines the defect or finds the abnormality.

We may briefly look at the abnormalities for purposes of classification, though this is readily available in standard texts:

1) **DEPRIVATION** — There is a group of children who are deprived, socially, nutritionally or emotionally. We have too many children with these preventable situations.

2) **MENTAL RETARDATION** — There are many children who are truly mentally retarded, but the most pathetic group are those who are in the borderline range by psychological tests. An I.Q. of 79 prevents the child from entering a learning disabilities class because 80 and over is required for such a class. Yet, a repeated test may show a score of 81 allowing him to qualify because the law says over 80 I.Q. I think it is an absolute tragedy that children are put in a position where they are so normal and yet, so borderline that they have to go to either extreme to qualify. If the child cannot make it in a regular class, they say his 79 I.Q. does not qualify him for a learning disabilities class. As a medical practitioner, I cannot readily accept this rigid division of children based on an arbitrary decision by I.Q. level. There must be a better way. Some children who have learning problems are really normal but just not terribly bright. They are just average in an above average school system.

People also get concerned if a child does not have a right/left orientation in nursery school or kindergarten. Children are frequently sent to the neurologist because the nursery school is not sure if they are right or left dominant! Parents may get upset when we say, "Well, you know, I think maybe you should forget about this appointment." The nursery school is also terribly upset that right/left dominance has not been established and believes this may impair the child's learning capabilities. We used to think of kindergarten as playschool. Now, it is obviously educational. Nursery schools indulge in "perceptual training." Recently, a child could not keep an office appointment at 10:30 a.m., for a significant medical illness, because he had to attend his school and the appointment would interfere — he is only 1-1/2 years old! We should pause to reflect where play ends and education begins.

3) **SPECIFIC READING DISABILITIES** — The children with specific reading disabilities are, in many ways, the most misdiagnosed because the child looks normal. He does not behave badly, does not look uncoordinated, is not "weird" or "funny," but is often called immature and unmotivated. He seems to do other things well and he tries hard, but he does not get the reading skills as he should. He is usually smart, his psychologist reports 120 on the Stanford-Binet; and it is hoped he will catch up next year. Well, next year has gone by and he has now got the alphabet only half reversed and the other children are reading and he is not; and this goes on and on. (By now, he may be going into non-academic remediation with eye exercises and glasses and other things.) We may end up with a fourth grader who is still unable to read a first grade primer, cannot spell, and cannot do many of the things

required of him. This is a phenomenon which is difficult to understand. We send the youngster for psychological testing; but when you look through the long battery of tests performed, no examiner actually asked the child to read; and therefore, specific reading disability, "dyslexia," has been missed. It is vitally important that you observe how a child reads and writes. A good school teacher can tell you — "I saw Jonathan, and do you know what he does? He reverses; he substitutes; he guesses; he can't spell; he adds letters; he can't capitalize; he can't punctuate." The teacher has got it all there and can describe it to you, but when we diagnose it, "dyslexia," the penny seems to drop.

We do not know why children are dyslexic. The ratio is said to be 4 to 1, males to females. (It may be higher, 10 to 1). We cannot understand dyslexia, although we know that reading takes place mainly in the left side of the brain. We do not know cause or mechanism, except for male predominance and significant hereditary factors. Short of being absolutely legally blind or grossly visually impaired, visual acuity has little to do with the ability to read, other than if the child cannot see the blackboard. With uncorrected vision down at 20/100, you may have to bury your nose in the paper to read. But, most of you can do that and read adequately. All children should be seen by an eye doctor to check vision, because if they need glasses, they should not have to suffer in school straining and squinting to see. But don't expect that to provide a miracle in reading—— it never does. As far as eye movement exercises are concerned, I have a definite opinion, which is strictly negative. The same opinion holds for many other methods being advised, such as the use of megavitamins. Despite all the vitamins, all the eye training, balance beams, and all the low blood sugar tests and other gimmicks in use, we are requiring more and more special teachers! If non-educational methods were "curing" reading problems, we would not have need for the teachers. It does not require too much sense to think that out! The dyslexic child is tragic because so often, he is defeated by a system in which he cannot read adequately. Any assignment given to the child which requires reading and following directions becomes an impossibility for the child. For example, if a child has a math assignment, it is impossible for him to even try to complete it because he cannot read the directions. He does not have "acalculia." He just cannot read. This is the child that ends up in a medical practitioner's office!

4) **MINIMAL CEREBRAL DYSFUNCTION** — There is a group of children who have been called "minimally brain damaged," "minimal brain dysfunction," "visual motor uncoordination," "hyperkinetic syndromes" — it does not matter much exactly what you call them. What we are talking about is a very mixed, nonspecific group of children, where again, males predominate. The

term, "damage," should not apply to most cases because most have no proven structural damage to the brain. In only a minority of cases does the prenatal or birth history suggest physical injury. We do not know the cause in most instances. These are children that you read about so often — "He's hyperactive; he's the sweetest little guy (when he will sit still); he's destructive; he has temper tantrums; other kids hate him; you can't take him to a restaurant because he upsets everything." He is often uncoordinated, may suffer from a speech defect, visual or auditory difficulties, and he often shows many, many other problems. They caricature this child as one manifesting all of the symptoms I have just described. Some children do fill the total bill, unhappily for them (in some ways happily because they raise so much of a rumpus, you can't miss diagnosing them beyond kindergarten). For every child like that, there is some other youngster who comes in with only part of the "syndrome." There are some children who speak perfectly well, who read, but cannot write. That individual just does not write properly but can tie shoes (maybe a bit clumsily), may have a little trouble with a zipper or with buttons, but when it comes to writing, he is hardly able to do it. This child sits in school with a written assignment and takes forever to write two miserably produced sentences. This earns him an F or U for writing, which is his reward for doing *his* best with the problem causing most difficulty in *his* life. They say if you don't succeed, try, try again. Well, this kid tries and tries again and finally gets something on the paper and gets an F for it! We are then asked, "What's wrong with the brain and how can we make this hand write?"

Similarly, we could see defects that are not in the motor sphere but are in the perceptual sphere. For example, the child who may have good motor skills cannot recognize pictures or maybe read too well or has trouble with geometric forms.

Children who have speech defects, particularly those who talked very late and are difficult to understand in kindergarten, have a tremendously high incidence of learning problems later and should be one of the easiest groups to identify. When you think about it, reading and writing are visual and motor forms of expression of language. Thus, if you have an abnormality in spoken language, you have a very high probability of difficulty in other areas of language function.

Many children are hyperkinetic, "on the go," "turned on," with or without any other problem. We see some children who learn perfectly well, if only you can keep them quiet and hold their attention; but others do not because they have additional problems. There is a whole variety of clinical manifestations, and I do not think there is a specific entity as "minimal brain dysfunction." It is a convenient term for an inconvenient group of children.

5) **POOR EDUCATION** — There is another category of problems in learning and that is poor education: a mediocre teacher, a personality conflict between child and teacher; non-recognition of certain aspects of the child as a human being.

We must now consider what medical treatment we can offer for children with learning problems. Drug therapy is necessary for *certain* children where hyperactivity is so bad that it is unmanageable by the classroom teacher (and of course, different teachers set different levels of unmanageability). When hyperactivity is a persistent problem, at school and at home, and the situation is interfering with a child's education and his ability to function at home, medication may be tried and often does help. It is never the complete answer to the child's problem. He is still going to be more active than others. But medication may make the difference between an intolerable and a tolerable situation. Unfortunately, medication does not help every child with hyperactivity and in some children, it even aggravates the situation. In this event, you may just have to deal with the child as he is. It is not my belief, that as far as helping the child any further, that medical science is a major contributor. This is a somewhat negative view, but it is an approach meant to be realistic.

We do not have any miracle drug right now and do not expect that very soon we will have methods derived by research to "retrain" the brain. I am firmly convinced that when education and psychology get around to doing carefully controlled, unbiased *longitudinal* studies of the methods that are being employed to "retrain" the brain's defects, they may be in for a big surprise. To my knowledge, in the rare instances the motor training programs have been subjected to strict longitudinal experimental study, the only benefit that appears to derive from the program is that the child is better adjusted because somebody loves him and somebody is interested in him. But motor functions turn out exactly the same as in the untrained group. Many people may disagree with that. Recently, I communicated with a pediatric neurologist[1] who has done a carefully controlled analysis. In a school, they randomly selected children to participate in their motor training program. The control group received no special treatments. When these children were retested a year later, the percentage that improved was identical in both treated and non-treated groups. There was a better adjustment to school in the treated group, probably because they had received a great deal of teacher devotion and parental interest as a secondary benefit. Important to note was the lack of difference in educationally relevant fine motor skills.

So much of what we do in pediatrics and in education is attributed to our skills and methods, we forget that natural development

[1] Russman, B., personal communication.

is also occurring. Children are constantly growing and developing. In point of fact, development takes place in orderly fashion in most children. When a toddler starts walking, he staggers all over the place, falls, improves, finally starts running. He falls many times but fewer and fewer as time goes by. By the time he gets to kindergarten, he's not clumsy; but he does not have the kind of coordination that a high school boy has when throwing a baseball. The high school boy, in turn, still lacks the degree of motor coordination and skill that a professional ballplayer has at age 25. And then, a pitcher at 35 years begins to decline in skill. There is a normal curve of motor performance which must be taken into account when examining the improvement in a child for the acquisition of motor and other skills.

Too many professional therapists attribute an impaired child's progress to therapeutic method without consideration of natural growth processes. On the other hand, therapists often help by encouragement and understanding, in addition to specific modes of therapy. We humans respond to success and become frustrated by failure.

Ten years ago, educators frequently refused to recognize that learning problems were educational problems. They sought correctional measures from optometrists, physicians and a variety of non-educational programs. Fortunately, the situation has improved and many schools are exerting considerable efforts to help the children. Some schools have educational programs that are flexible. Learning disability classes, in addition to individualized and remedial tutoring, are proving beneficial. Yet, certain schools still avoid the issue, allow the problems to continue, and tend to place blame on the child and his parents. They continue to be extremely rigid in demands for adherence to the formal curriculum.

It is a relatively common experience that remedial help is offered to the child to ensure that he attains the desired standards of achievement. In spite of this, many children are unable to "conform." Educators often refuse to accept some alternate course and persist in their demands. The predictable result is emotional disturbance and progressive lack of motivation for learning by the child.

Recently, we encountered a boy in the 8th grade who could not add 17 and 9, in spite of tutoring in math for four years. The principal insisted that further tutoring was the answer. The use of an electronic calculator was forbidden because it would set a bad precedent!

It should be evident that some children do not learn by conventional teaching methods. These children should be permitted to utilize their skills by alternate learning approaches. The majority of children are capable of learning, but not all of them do so in the

same way or at the same rate. Recognition of differences in learning patterns is essential.

Clinical practice still reveals far too many youngsters who are so frustrated with their school experience that they soon fail to progress. Every child requires success in his educational endeavors to remain motivated and to enjoy learning. Early recognition of learning difficulties is desirable and prompt remediation must be instituted. The child with these problems also needs recognition as an individual. Delay in offering understanding and help may lead to an "educational casualty," sometimes irreparable.

In conclusion, it is appropriate to emphasize, once again, the need for early recognition, help and compassion for the child with a learning problem. It is also necessary to state in unequivocal terms that primary management of these children must remain the responsibility of the educational community. The health care system must remain available for consultation and secondary help but cannot substitute for teaching expertise.

General References

Myklebust, H. R. (Ed.). *Progress in learning disabilities*, Vol. 1. New York: Grune and Stratton, 1968.

Myklebust, H. R. (Ed.). *Progress in learning disabilities*, Vol. II. New York: Grune and Stratton, 1971.

Wender, P. H. *Minimal brain dysfunction in children*. New York: Wiley-Interscience, 1971.

Rutter, M. & Martin, J. A. M. (Ed.). *The child with delayed speech*. Philadelphia: J. B. Lippincott Co., 1972.

Grossman, H. J., M.D. (Ed.). The Pediatric Clinics of North America. *Symposium on learning disorders*, 1973, *20*(3), Philadelphia: W. B. Saunders Company.

Rapin, I. & Erenberg, G. Brain damage in children. In Kelley, V. C. (Ed.), Brenneman's *Practice of pediatrics*, Vol. IV, Ch. 17. Hagerstown, Md.: Harper and Row, 1974.

Bakwin, H. (Ed.). The Pediatric Clinics of North America. *Developmental disorders of motility and language*, 1968, 15(3). Philadelphia: W. B. Saunders Company.

LEARNING DISABILITIES — THE EDUCATOR'S PERSPECTIVE

John F. Jacobs

Learning disabilities has taken on a number of definitions in this country, but educationally when we speak of children with learning disabilities we are typically referring to children who display a discrepancy in their performance, an unevenness in development, whether this be in academic achievement, motor or perceptual functioning or behavior or emotional development. Learning disabilities represents some marked contrast or inability to function in an academic or school setting at the level which would normally be expected of the child in light of such factors as his overall intelligence, his socio-economic background and his exposure to formal instruction. However, excluded from the definition are children who are blind, deaf, physically handicapped, emotionally disturbed, etc. In other words, children with learning disabilities are those children who are experiencing difficulties in school but do not bear a distinct traditional label.

The programs that have developed for working with children with learning disabilities have evolved from earlier programs for children who had been called minimally brain-injured, minimal cerebral dysfunction, or brain-injured, or neurologically handicapped. The first reference I have been able to find to the concept of minimal cerebral dysfunction was in a 1941 publication. However, the bulk of the work in this area, actual and careful research, followed the Second World War and was conducted primarily in psychological laboratories. It was not until the very late fifties and the early sixties that it began to have relevance in the field of education. The work of Kirk, particularly on the I.T.P.A., focused educators' awareness and perhaps highlighted the need for provisions for what has since come to be called learning disabilities.

Today, in my opinion, the major responsibility for helping children with learning problems rests primarily with two groups of individuals: the parents and the educators. These two groups have

the primary responsibility for the child. Of course, each rely upon other professionals, such as psychiatrists, neurologists, pediatricians, social workers, etc. However, day to day management, planning, training, and education rest almost solely with the parent and with the teacher.

Over the past fifteen years a number of educational programs for working with children with specific learning disabilities have evolved and have acquired their disciples. Most of you are familiar with names such as Barsch, Ballantyne, Frostig, Kephart, Kirk, etc. Each of these names represents a different system of beliefs regarding children with learning problems. Each has proposed assessment and remediation procedures for helping children.

The Frostig program is a typical example of the pattern that has been followed in the development of these programs. Dr. Frostig developed the Developmental Test of Visual Perception, including five subtests and a vast array of remedial materials. Dr. Frostig's premise, when she began work on the program, was that some children had visual perceptual problems and many of the same children later had problems in reading and in various other academic areas. She felt remediation of the visual-perceptual difficulties the children were experiencing would enable the children to acquire academic skills with less difficulty at a later time. The assumption being that the visual-perceptual problems caused the reading difficulties. The same kind of reasoning, to a greater or lesser degree, can be found in many of the other programs for children with learning problems.

The logic is analogous to that contained in the following: If we measured the feet of 100 boys who were exactly 10 years of age, and separated them into two groups — those with large feet and those with small feet — according to most of the research done on the gifted, the group with large feet would have a higher average I.Q. than would the group with small feet. Could we, then, raise the I.Q. of the lower I.Q. group by stretching their feet? Can we teach a child to read adequately by having him bounce on a trampoline for an hour a day? Can we help a child's reading by having him copy geometric designs with pencil and paper?

I suspect, in the story about the boys with large and small feet, we would also find a much greater incidence of visual-perceptual problems among the group of boys with small feet. Starting with the investigations of Terman, we have clear evidence that many positive attributes in children are correlated, as well as many negative ones. Apparently it's a function of human development that compensation does not normally take place; the rich get richer and the poor get poorer. Bright children are better coordinated, better looking, have more advanced physical development and, of course, are better readers.

If kids who are brighter have bigger feet, and if the same sort

of relationship exists between visual-fine motor problems and reading, we can assume that work of visual-fine motor development will have as much effect on reading, as foot stretching would have on I.Q. Yet a great deal of energy, effort, and time on the part of teachers, parents, and various other professionals is involved in remediating one kind of activity in order to bring about the remediation of a totally different skill.

The followers of Kephart's work provide another example of the phenomenon. Kephart's program is highly physically oriented: walking boards, angels in the snow, chalk board exercises, body awareness, etc. Many school programs devote a great deal of time working in this area with children who have been found deficient on the non-standardized Purdue Perceptual Motor Inventory. Many programs put emphasis on such tasks as having children work out on trampolines, so they would become aware of their bodies in space, believing this will help children better perceive which side is up on the paper they are working on, and which end of the *i* to dot, thereby improving their reading and writing skills. Yet I know of virtually no controlled, empirical studies which provide clear evidence to confirm the value of these programs. I do know, however, of several controlled experiments (e.g. Master's theses), which refute the value of this type of program. I understand that there are approximately 25,000 case studies at the Purdue Center, accumulated during Dr. Kephart's work there, and none of this data has been subjected to even retrospective scientific analysis.

There are a great many programs, both in the United States and abroad, and individuals working on programs aimed at remediating correlates of desired behaviors. The amount of time and money spent by professionals, governments, and parents in these programs is enormous.

All of this is not meant to suggest that these programs have no value. They do, very obviously! If a child is having visual problems it's imperative that they be corrected. But correcting the problem will not necessarily correct the child's reading. If a child is having trouble maneuvering from place to place, obviously he should learn how to maneuver, to walk to balance himself. Children who can't hit a baseball, who can't jump rope have a right to be taught to do these things. But expecting remediation of their ball hitting behavior or their rope jumping behavior to result in improved reading is, I think, a bit unrealistic in light of the research that exists. More statisticians emphasize that correlation is not causation, yet the belief that it is seems to be the basis of a great number of the remedial programs in this country.

If we want to help a child with reading, reading is what we should be working on. If we want to help a child with arithmetic, arithmetic is the thing we should be working on. If we want to help

a child manage his way down a crowded hall, it would seem to me that that would be the thing to work on. But to suggest that following a bouncing ball with the eyes will help a child to read seems to be without foundation.

As educators we do not have all of the answers by any means. We do have some strategies for helping youngsters: We *can* help educate most youngsters. We do not have any single technique that works with all children with learning problems: there is "no such animal." To me there seems to be four different groups of problems we, as educators, face when it comes to children experiencing problems in school.

First, they weren't taught. That is, for some reason a child was not exposed to a particular academic, social, or behavioral training. We recently evaluated a bright second grade girl who had made above average progress during first grade; but by late February, had shown virtually no growth in reading during second grade. It turned out that in her particular school she had managed to go to arithmetic, social studies, etc. with her second grade classmates in a departmentalized program, but had somehow not been scheduled into reading. Another recent incident involved a second grade girl who had been allowed to cuddle a favorite toy in an "open" experimental school for a year and a half since this was what she chose to do. These are rather extreme examples of not being taught, but less extreme instances occur regularly.

Second, children didn't learn. That is, the material was presented but the children weren't attending to task. With teachers teaching classes or subjects instead of individual children this is an all too frequent occurrence.

Third, the children learned improperly. This can stem from misperception on the part of the student or, particularly in the case of aberrant behaviors, from a lack of understanding on the part of the parent or teacher of how children learn.

And, finally, the children weren't capable of learning. I am referring in this instance to children with moderate, severe or profound retardation particularly. When children are mentally retarded, they are legally excluded from programs designed for children with learning disabilities, the assumption apparently being there is no unevenness of learning styles and abilities in mentally retarded children. Yet, I am sure Dr. Kessler would be one of the first to agree that there is more unevenness than there is evenness in the learning styles and abilities of mentally retarded children. With children labelled mentally retarded, and with children labelled learning disabled, successful education and training is a matter of selecting for each child the techniques that have the highest probability of success, based on the strengths and weaknesses of the individual child, as revealed by comprehensive educational and psychological

profiles.

When evaluating children educationally, in order to develop prescriptions to provide techniques for remediation or circumvention, many special educators use a model consisting of a box, representing the process phase of handling information; with five inputs, representing vision, hearing, touch, taste and smell; and two outputs, representing motor and speech functioning.

Smell and taste receive very little attention educationally, the major emphasis being on vision and hearing; while touch is rather a back up modality, the educational use of which has, from time to time, been advocated by several prominent educators. Although various representations of the process portion of this model could be used, I teach my students to use Guilford's structure of intellect to organize their analysis of a given child.

On the input side of the model, the eyes, ears, fingers, etc. represent the receptive aspect of information processing within the child. Elements on that side of the line, that is the eyes themselves, the ears, the hands, etc., are the domain of specialists other than educators. If the child has a visual acuity problem, it is the responsibility of the opthalmologist. If the child has an auditory acuity problem it is the domain of the audiologist, or a similar professional. Everything on the other side of the line, from perception through output, is the domain of the educator: perception, process, encoding and output.

It seems to me there are two primary avenues of working educationally with children with learning disabilities; two ways of helping the child. These involve either remediation or circumvention. Remediation, to me, represents the developing of impaired processes and circumvention represents the use of alternative modalities. For instance, with blind children, how do we teach them to read? If a child is truly blind, there is no way of remediating the blindness educationally. If the blindness is not amenable to medical correction, it becomes the responsibility of the educator to help the child through circumvention, using one of the other input modalities, such as audition or touch. Children learn to read Braille or they learn through talking books.

Remediation is the process of developing or enhancing skill areas in which the child is deficient. One of the common parts of most intelligence tests is sequential-memory: the ability to remember things in sequence. If a child can only keep three numbers or three sequential stimuli in his head at any time, it would be difficult for him to learn to spell a five or six letter word. He may remember only the first three or the last three items of a six item stimulus (a memory problem), or he may remember all the letters and not have them in the right order (a sequencing problem).

What happens when you recite the multiplication table? You

don't say eight, nine, equals, times, seventy-two. So for the child to master the multiplication table he must remember both the elements and the sequence of elements. Spelling and multiplication are two major academic areas where sequential-memory is important.

Can these skills be developed? Can they be remediated? A great deal of evidence suggests that they can be. Once again, you don't develop them by skipping rope, you develop them by working with the individual child, starting with simple two and three unit sequential memory tasks and then adding more items to the task. Starting, for example, with short poems and adding to them until the child learns long poems.

If the child isn't learning, it's the teacher's responsibility. So often we lay the blame on the child. So often I hear: "He comes from a bad home;" "His parents don't care;" "He's brain-injured;" "He's emotionally disturbed;" "He didn't get his sleep last night;" "He's a rotten kid;" "He's mean;" "He doesn't pay attention;" "I can't get him to sit in his seat." Have you heard anybody making these kinds of comments? "His family is on welfare;" "His mother isn't married;" "He lives in a home with eight brothers and sisters." Those are excuses for not knowing how to teach the youngster.

Where is the child today? What are his strengths? What are his weaknesses? Assessing each child, developing a strategy for teaching the child, for reaching the child, is a teacher's job. If the child does not sit in his seat for more than three seconds at a time, I think it's the teacher's job to teach him to do that. Medicine can help. There are drugs that can sometimes control hyperactivity. But the problem can also, very often, be managed behaviorally, can be managed educationally. My wife teaches an LD class. One of the youngsters in her class this past September managed to stay out of his seat, over a period of a week and a half, four and a half out of every five minutes. Within a matter of days, without medication, the figure was completely reversed by just paying attention to the youngster at those times when he was in his seat. Using operant techniques, reinforcing his in-seat behavior, he began staying in his seat four and a half out of every five minutes. But again it was a matter of identifying the particular problem that the youngster was having, establishing specific goals for that child and then working on the problem. That particular youngster is now in regular classes for fairly long periods of time each day.

Most of you are familiar with reports that psychologists and other school personnel prepare for particular youngsters. Most of them describe the problem that a youngster has and yet provide no ready means for teachers to implement educational procedures for remediating a particular child's problems. If, as a teacher I have a lot of experience in working with children with problems, and I receive information that a child has sequencing problems, I will know what

to do. I will know how to work toward the remediation of his problem. But most teachers have not had extensive training, nor experience working with handicapped children. Examples need to be included in the psychologists' reports; specific programs need to be suggested that meet a child's particular needs. This not only involves the kinds of training that is given to a youngster, but also areas. For instance, many times children are doing quite well in arithmetic or spelling and doing poorly in reading or social studies. The range in the school classroom at 4th grade or 3rd grade extends anywhere from pre-school to 5th, 6th, or 7th grade. Giving children academic material at grade level rather than at his performance level can cause some very serious problems, both in behavior and achievement. One of the studies that we are currently involved in focuses on hyperactivity as it relates to reading level: looking at the reading level at which children are functioning, giving them material that is nine months below, nine months above and/or at their reading level and looking at the levels of distractibility and hyperactivity while they are working on these particular kinds of tasks. I am sure most of you can immediately recognize the kinds of behavior that accompany inappropriate educational materials. When a child is really frustrated by the reading, it's not simply a matter of his not achieving or not gaining from that material. For instance, if a child functioning at a second grade level is working in a 4th grade reader, the gains made at 4th grade reading are virtually nil; obviously, because he does not have the second grade background. What happens if you put him into a second grade reader that he can handle, at which he can succeed? He will achieve, he will grow and eventually he can reach the fourth grade level.

The concept of the open school lends itself to this type of remedial individualized instructional program quite readily. But the same kinds of procedures can be developed in a normal classroom. A great deal of work is involved when a teacher individualizes instruction for 25 or 30 children, but grouping into two or three groups does not seem to accomplish it. Most of you have seen reading groups in schools. Many of you have used them: the Bluebirds, the Redbirds and the Vultures. Very often it's a child's intellectual level, not his reading level or even style of learning that is used to determine the group he will be in. All children do not learn best by seeing and saying. All children do not read best using a phonic method.

Back to the point on the teacher's responsibility. A friend of mine gives an example of accepting responsibility, of professional growth. Picture, if you will, a circle and around the outside of that circle a series of smaller circles each about 1/3 the diameter of the large circle — in other words, like a flower center with 15 flower petals around it. The circle represents the teacher's knowledge and skills. Around that circle are tangential skills that the teacher could

have that would help her be a better and more effective teacher. These are probably skills of which she is aware and certainly well within her ability to acquire. Far afield from that ring of little circles around the central circle are such things as neuro-surgery, which also might help the teacher help the child to learn. But that's relatively unrealistic for us to expect of teachers.

Most teachers attempt to stay up to date with, to a greater or lesser degree, the profession. They attend meetings; they attend in-service training; they read journals. In so doing, they are expanding their circle of competence, they are encompassing many of the smaller circles around that central circle representing their knowledge and skill. What happens? As they gain competence we can assume that they learn the skills involved in each of the little circles. What do you now have? You now have a bigger circle, don't you? More skills and competence on the part of the teachers. What is around that bigger circle? There is one of two things: there are either more little circles than there were before or there are an equal number of circles but they are considerably larger. As you acquire skill and knowledge, as you become a better teacher, you become aware of more and more things that are peripheral to your knowledge and skill which could help you become a more effective teacher.

I would like a nickel for every child that I have failed to help, through my ignorance. I have to accept responsibility for it. It was my fault when I was unable to help a particular youngster for lack of knowledge. Hopefully, when confronted with a similar problem the next time, I will be able to help. My circles, I hope, are growing.

One final point that I'd like to discuss very briefly is the concept of integration: special classes for the mentally handicapped were developed before the turn of the century and to my way of thinking, they represent a nineteenth century concept of special education. More recently the concept of integration has been advocated in the public schools; that is, integrating children into the regular classes insofar as possible. As many of you are aware, most of the research comparing special class placement and regular class placement suggests that there are virtually no advantages, on any measurable variable, to special class placement. That would *seem* to suggest that special educators are not capable of helping kids. I think quite the contrary is true. We do know how to help particular youngsters. We do know how to remediate or how to circumvent problems that particular youngsters are having. We do not, however, have *class* instruction techniques that are any better than the regular classroom teacher. If we are going to use group instruction techniques, if we are going to assign group work to youngsters, it seems to me to be a tremendous waste of money to have group instruction for groups of 8 or 10, when the same instruction could be given in a regular class. Furthermore, the identification of children as learning disabled,

behaviorally disordered, emotionally disturbed, mentally retarded or what have you, is a permanent kind of label. Yet when we send children out of a classroom for help, for tutoring in one particular subject, it is a temporary condition. I am suggesting that children be assigned to regular classrooms, be left in regular classrooms for all those activities from which they are able to profit and be taken out for individual help by special educators for those tasks that we, as special educators, are trained to help them with. For many of the youngsters this would involve their being in individualized helping situations for an extensive period every day. The designation of these children as regular children who are getting some help as opposed to "This is an exceptional child whom we are letting into a regular class," makes a great deal of difference in what happens to the youngster, in the way he is treated, and in the way he grows.

LEARNING DISABILITIES — A MUSIC THERAPIST'S PERSPECTIVE

Anita Louise Steele[1]

The Cleveland Music School Settlement's[2] philosophy is traditionally one of empathizing with the varied problems encountered by people in all walks of life, and accepting responsibility for implementing programs to meet individual needs. While its basic aim is not to produce professional artists, it does give its students an education that could form the basis for a career, as well as a deep appreciation for the art of music. With this background and a history of providing music instruction since 1911, the music school was a likely place in which to establish a music therapy program. The Music Therapy Program was created in 1966 staffed by persons not merely interested in the problems of handicapped children, but with an educational and training background in the specialized area of music therapy which would enable them to render a professional service.

For those of you who may not be familiar with degree programs in music therapy, the bachelor's degree (granted through a college or university school of music) is a four year curriculum with a six month required internship in an approved clinical (or direct service) setting. The student must meet those requirements needed to graduate from the school of music, and in addition, complete specialization training in the application of remedial education and behavioral therapy techniques in the area of music with the handicapped. Registration as a music therapist is granted by The National Association for Music Therapy once the student has met the degree requirements as specified by this organization. Although the work at

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[1] Speech delivered by Marion Vaughan, Director of Music Therapy at Beech Brook Children's Home.

[2] The Cleveland Music School Settlement is a community music school with its central complex of buildings located within the University Circle area. It is a United Torch agency; a member of The Greater Cleveland Neighborhood Centers Association; and a member of The National Guild of Community Music Schools.

the Settlement is primarily with youngsters, music therapy is used across a broad range of ages (from pre-school to geriatrics), and disabilities.

The Music Therapy Program at the Settlement attempts to respond to needs expressed by both individual families and agencies throughout Greater Cleveland. In the community, children are enrolled in the program at the Main School on Magnolia Drive; at the Harvard-East Branch, 18200 Harvard Avenue; at Rainey Institute at 55th and Superior; and at the Koch School on Wooster Road on the West Side. Families enroll their children in the music therapy department after having been referred by teachers, psychologists, social workers or some other professional. Referral is not, however, a prerequisite for enrollment. Often, in fact, a parent may learn of the program from another parent of a child already involved.

A typical session is held weekly or bi-weekly for 30 - 45 minutes with the children seen individually or in small groups. In outlining an appropriate program for the child, the music therapist takes into consideration not only her own observations of the child, but also those contributed by the parent, the teacher and others who have been involved with the child. Because the range of music and music related settings is so varied and flexible, the music therapist constructs a program tailored to very specific goals for each child. The goals which are set determine, to a very great degree, what instrument might be worked with; the way in which material is presented; and the number of people involved in a session.

In community settings, there are naturally some obstacles affecting satisfactory ongoing lines of communication with other professionals involved due to limited time and money; however, the lines are open and a real effort is made to maintain the necessary contacts.

Rarely, if ever, in the area of learning disabilities have we encountered a child who was accompanied by a definitive explanation of his particular disability. We usually do not receive a written description of how the disability might be expected to affect his development, nor do we receive specific suggestions regarding how the child might be approached. Generally the parent relays verbally something about whether the disability is in the area of perceptual-motor development, reading, or any other area that falls under the rubric of learning disabilities. Most often the parent passes on only a very vague account of what someone has defined as a learning disability (Here we are not getting into the problems of diagnosis and definition, nor are we suggesting that "blame" rests with the parent or professionals. We are merely reporting the reality of many parents who bring their children to our particular program).

For most youngsters seen at the Settlement, music therapy is often the only program outside of the school in which the child participates. As is often true of other community based programs which

come in contact with children who have handicapping disorders, there are frequently opportunities to refer a family to other specialists and agencies for testing or evaluation regarding placement. The Cleveland Association for Children With Learning Disabilities, the Mental Development Center, the Speech and Hearing Clinic at Case Western Reserve University and the Speech Department of Cleveland State are among those agencies to which referrals are made. In addition to services rendered to individual families, the Music Therapy Staff designs programs for other agencies such as Beech Brook and Bellefaire, which are residential treatment centers for children with behavioral and learning disabilities; the Montessori Special Education School; and Help, which are facilities serving the child with retarded development. These agencies have contracted with The Cleveland Music School Settlement for the services of a music therapist to be given within their own treatment or educational settings. Within residential treatment centers, the music therapist is a part of the total treatment milieu, and in all settings mentioned, the music therapy program is carried out in the special education facility where the music therapist and the teacher work very closely together.

Music therapy for the learning disabled child as well as for other youngsters with physical, learning or behavioral disorders, is a structure in which the techniques of the specialist are directed toward: (1) Increasing competency and enjoyment in areas of strength which can be developed through music learning experiences appropriate to age, interest and ability. (2) Using appropriate music learning environments as occasions in which to work with the child toward important behavioral objectives. Such objectives include decreasing behaviors which interfere with the child's learning. Emphasis is placed on decreasing responses which interrupt social and academic development, and replacing these with more effective behaviors. The music therapist is also concerned with discovering methods of approach effective in modifying behavior and motivating the child which have possibility for implementation beyond the music therapy session itself.

Contrary to the expectations of many people interested in music therapy, music therapy (at least at the Settlement) is not a "method" or "approach" for correcting learning disabilities. It is a supportive service which can have a significant influence by motivating the child into more productive channels of living and learning. The child is helped to realize his greater potential. A music therapist does not have an index out of which to draw six or ten steps which the dyslexic child must go through in order to read notation. He does not have a series of drills which the child with auditory retention problems must be presented in order to correct his problem. Things are just not that simple . . . or perhaps our knowledge of learning disabilities is just not that advanced!

Based on whatever background information is available the music therapist's responsibility is to design a music learning experience, drawing from many resources, the objective of which is to motivate the child to move toward a higher level of functioning. Because a handicapping disorder indicates the presence of conditions which interfere with development, emphasis in music therapy may first be placed on these non-musical responses. Behaviors frequently exhibited include leaving the area of the activity (or possibly never getting there at all!); inability to attend to a directed learning experience; lack of self-direction which would enable more independent learning; or a low frequency of self-initiated behavior.

Another common behavior toward which attention is directed is one of responding appropriately to verbal direction. The youngster may not demonstrate ability to complete tasks or to stay with a task for a reasonable amount of time. Many learning disabled children also lack a repertoire of appropriate social skills necessary to establish peer relationships. A child may therefore be referred to music therapy specifically to have an experience in music with other children. Beyond an "experience" however, the child receives training in the "how to" of working with other children and is given more than the average number of opportunities to exercise these techniques under the guidance of the music therapist. A child who has extreme difficulty in trying new experiences may be referred to music therapy in order that a program be designed to aid in altering this pattern. A music setting would then be developed in which many new and different opportunities are presented to which the child must respond.

Some children are referred to the program because it is thought that there is likely to be a high response to behavioral change procedures in such a setting since children generally like music related activities. Music is quite a part of the world of childhood in our society. In fact, whether young or old, there is generally some type of music for which an individual expresses a preference. Most, if asked, would also be able to state a preference for an instrument they would like to learn to play if given the opportunity.

In some cases, families seek out the services of the Settlement music therapy program because they place a great deal of value on the place of the Arts, specifically music, in the child's life. The parents, and usually the child himself, look forward to learning to enjoy, participate in and produce music, which is possible through the techniques of individual programming. Very often a child in music therapy also has brothers and sisters who are enrolled at The Cleveland Music School Settlement. Rather than place the child with special needs into a situation in which ordinary music teaching techniques have a high potential for failure, he is placed in the therapy program. In this setting it is anticipated that he will be able to

experience an appropriate level of success like other members of his family, or his friends who are in the regular program.

A child of about 10 who had been in our program for several years, and learning to play piano, told us of an experience which he had with his aunt. After hearing him play, she asked why he wasn't as far advanced in his piano book as her own daughter who had been taking lessons for approximately the same amount of time. We thought he handled the situation rather well when he told her that it didn't really bother him. He had a special music program designed just for him where it didn't matter what other kids were doing. We were pleased to see that this message got across to him.

At both the Main School on Magnolia Drive and at Beech Brook, one-way mirrors and observation booths make it possible for parents, teachers, and others to observe the child during sessions. In the community based programs, the parents have welcomed this opportunity to observe their child "in action." We discovered early that parents observing their own children need counseling before, after, and often during, regarding what they can expect to see and not see; what may and may not happen on the part of the people in the music room; and how they should react to the child following the session. It is not unusual for parents to become involved in some way with the program. Sometimes parents are trained to observe certain responses and to record these for the music therapist during the course of the session. Not only does this help the parent to feel more involved in the program, but it also helps him to become more aware of *specific* responses and how these may be changed by the application of systematic consequences. Naturally the music therapist benefits from having someone there to help collect data.

You may ask, "Well, in all this, does the child actually learn anything musical?" Indeed he does. The music learning experiences introduced are those which have been determined to be age appropriate and potentially of interest to the child. In addition, the child's level of functioning is also a major consideration. In the case of the learning disabled youngster, a great deal of attention must be given to how the child learns best and what his most productive channels seem to be. The value of visual, tactile and auditory cues are evaluated in terms of the child's response to the modality stimuli. The degree to which a sensory modality is impaired is important for the music therapist as well as the teacher to know, since it suggests whether it lends itself to remediation or should be side-tracked by the use of another input channel.

The music therapist draws upon a wide variety of approaches to teaching music and is usually characterized by the ability to be creative in designing somewhat unique and often unusual approaches and materials! It does take more than a little bit of effort to design music experiences which will present the opportunity to work toward

behavioral as well as musical objectives. This is necessary however since target goals for the child are determined so that musical and non-musical objectives are worked on simultaneously. In learning to follow verbal direction, for example, the child will be following not only non-musical directions (perhaps to stay at the piano or on a rug), but while there he will be following musical direction (perhaps to play a piece or identify rhythmic notation). The development of competencies in or out of school, social, academic, artistic, in math, in football, or in playing drums — seem to be considered by most authorities to be terribly important for the learning disabled child. It is interesting to note that it sometimes seems that it is the act of being involved in learning a special skill that is most important and not always the result of the effort. Both the act of learning and the outcome are important to the L.D. child. He must, of course, be helped to appreciate his own best efforts and to enjoy his accomplishments. The way in which this is approached by the adult . . . be he music therapist, teacher, parent, psychologist . . . has a great deal to do with whether or not he himself will learn to be so "mature" in his self-evaluation.

Working with children at the Settlement also means, as I have indicated previously, working with parents. Parents, of course, vary in their expectations of results from their child's involvement in a music therapy program. Some parents are product oriented and equate success with quantity of what is learned and on reaching some pre-determined "normal" standard. Some expect little and their interpretation of what they see is likewise influenced. (In other words, unless directed by the music therapist, they can not recognize when the child is making real accomplishments either behaviorally or musically). A few parents are not necessarily unreasonable in their expectations but they see any progress as an indication that *this* is where "it's at" for their child. They tend not to place success in proper perspective. The music therapist has the job of helping the parent see the importance of the "total effort" and to understand that success in one area involves work done in music therapy, as well as work done at school, at home and in other areas which are a part of his life. Another group of parents are those who view the child's involvement more appropriately. These are usually the parents who have learned to work very well with their children and who have dealt somewhat successfully with learning disabilities over a period of time.

Music therapy sessions, as you perhaps can see, are settings in which the therapist assists the child in minimizing those conditions, or events, which interfere with learning and social interactions, as he develops skills in music which he can enjoy. In our situation where success to the child is very limited, we have found that movements toward objectives can be most quickly effected through the applica-

tion of behavioral principles and contingency management techniques. The format which is then followed in developing a program for an individual or a group is made up of basically five steps: (1) observe, (2) pinpoint, (3) record, (4) consequate, (5) evaluate.

Observation entails observing how the child learns and responds to objects and people in the environment as he is introduced to the music experience. Where the music therapy program is functioning within a treatment or educational setting, the music therapist would probably observe the child in his classroom setting and in other types of programs. The next step in the sequence leading toward development of a program is that of "pinpointing" or defining specific target objectives. Let's take an eleven year old youngster referred to us by a piano teacher who decided she could not work any longer with the child because the student consistently failed to attend to details of written fingering and rhythm. The child, however, told her parents that she liked music and wanted to continue. After a brief time of working with the youngster (teaching her piano), it was apparent that she was a "low responder," initiated very little, spoke very softly to the point that she could hardly be heard and also did not respond to fingering and rhythm as written in the music. Two initial target objectives were: (1) to increase the frequency of self-initiated conversation with the music therapist and (2) to increase correct fingering. Of course there are other things that would have to be done to bring her overall level up. However, it was decided to begin with several priorities and give our primary attention to these.

"Recording" is simply keeping a record of the responses, musical or non-musical, which will be receiving your attention. There are many different record keeping systems from which to choose. The type you choose depends on all sorts of variables such as the nature of the response, your own skill, or the resources at your disposal. Such a record is important, for it provides a reading on where you began. Over time, it will aid you in determining whether or not what you are doing is having the effect you hoped for.

The fourth step in this sequence is to "consequate" or predetermine what events will now follow specific responses exhibited by the child. In other words, a procedure to increase, decrease or perhaps even maintain certain behaviors is now introduced. Consequation actually involves two things in a music therapy setting: (1) the programming of information and skill to be taught, and (2) the programming of reinforcement for specific responses. In the case of our low responding young musician who played piano with incorrect fingering and rhythm, we introduced two related procedures. First the youngster was asked what she would like to work toward earning such as a 45 RPM record, a tape of some of her favorite popular songs, or a pair of earrings. Our young lady chose to hear a tape of

some of her favorite tunes (which the music therapist made herself). The responses the child was to work toward were defined and written out for her. In order to get some self-initiated conversation going, a few minutes were spent at the beginning of the lesson modeling the response (Even in a music lesson it can be fun to do a bit of chatting!). A record was made of correct fingering on certain pieces specified a week in advance, and the percentage of correct notes or correct measures was computed after the first time the piece was played. The higher the percentage of correct responses, the more points earned. Opportunities for self-initiated conversation were given during the session with points also earned in this manner.

The fifth step is evaluation and is related to "recording." Evaluation is best, of course, if it is continuous and based upon a valid record of the response with which you are working. You must be willing, however, to accept the responsibility for determining what is and is not working, determine what the next step will be, and move on. The children themselves are often aware of the behavioral, as well as the musical, objectives toward which they are aiming. Sometimes they also participate in the process of defining these objectives relative to the music learning setting. After a period of time, when it is determined that the responses being worked toward have reached a reasonable level, the additional reinforcers are faded out on a graduated basis. The object of the whole plan with our low responding young musician is that she be able to maintain a rate of responding (both musically and socially) appropriate for her age and ability, and that it be maintained by her own self-motivation within a natural music lesson setting.

It is always difficult to select examples which can be truly representative of a program. As everyone knows who works with children, no two youngsters are the same! In thinking of examples which might be shared however, I considered some possible levels at which need and program meet within the structure of music therapy settings at the Settlement. Such an ordering will perhaps help give an idea of the range of ways in which music therapy may serve a supportive function for children with various disabilities. One begins rather naturally with the child, or group of children, the environment of which the specialist is a part, and the basic tools which the music therapist has at his disposal within the setting. These tools are basically:

(1) The response of the adult to the child and the situation — responses which may be communicated by facial expression, physical response, verbal responses, etc.

(2) The techniques by which the music material and content of the music learning experience are presented. Both traditional as well as rather specialized approaches are available.

(3) The overall structuring of the sessions and the manipula-

tion of stimuli in the facility where the youngster is seen.

(4) The manipulation of events as contingent consequences for specified behavior and the use of reinforcement techniques (Social response would also be included. However, it has been given a special category). Of course, these four basic tools have many subcategories and can be combined in any number of different ways and degrees. However, a few of these combinations can serve as the basis for differentiating some of the levels at which the music therapist might work with children who have various learning and behavioral handicaps.

The lowest level we will call Level V. At this level, one is usually dealing with the child with severe mental retardation and multiple disabilities. The major initial objectives with some children at this level would be in the area of increasing imitative responses, training self-help skills, and often decreasing stereotyped hand or body movements. The structure and type of activities utilized is usually simple involving the use of basic rhythm instruments, sound producing objects, children's tunes and records. Behavioral modification techniques are adopted for the music setting as when the presentation of preferred musical stimuli (i.e., recorded music) is made contingent upon the absence of a specific response such as eye-gouging, head banging, staying in one area, etc. At this level, the use of teaching techniques in developing musical skills is not yet in the picture. Verbal praise is paired with other types of reinforcement even though the child may not initially seem to respond to praise, or touch.

At Level IV primary emphasis may be given still to behavioral responses (staying in the area, for increased periods of time, quiet hands, etc.), but the occasion for such behaviors may be set within the context of developing basic musical skills using melodic as well as percussion instruments (making responses in short sequences with physical assistance, then from visual/auditory and then visual cue alone, pairing speech and rhythmic patterns, etc.). Special programming techniques are used to develop musical skills. Activities engaged in are varied during the session (a session may incorporate 6 different activities). Social praise and recognition are paired with the use of reinforcing events which may not be natural to the setting. Children at this level are often young children with perceptual/motor problems, difficulties directing their own behavior, and some degree of retardation at least functionally. In order to help a particular child become more aware of a desired behavioral response, the music therapist may use stickers on the child's shirt when he has stayed in the area of the activity for perhaps 2 minutes. Picture charts to take home might be filled in contingent upon the child's keeping his hands to himself.

At Level III, we often have the child of Level IV who has

grown older. He may still be having difficulties adapting his behavior appropriate to different settings requiring the use of specified contingencies. The number of activities during a session has been reduced so that there is more concentrated effort (again via special programming) in those areas for which the child has expressed a preference and usually experienced some success. Types of reinforcers used may now be more natural to the music setting with only contingent adult praise or recognition used whenever most effective. For instance, a group of eight and nine year olds at Beech Brook were working on individual behaviors which were giving them trouble in a group setting. Tokens were dispensed at specified times during the activity (in which many opportunities for the inappropriate behavior were purposely given) and then exchanged at the end of the session for the opportunity to use a "high status" instrument (snare drum, trombone, trumpet, guitar, etc.) for five minutes. A youngster who has been operating at Level II for a while maintains reasonable control over his own behavior without the strict use of behavior management techniques. The structure of the session becomes even more concentrated with the child himself becoming more interested in developing a specific musical skill (i.e., piano, drums, guitar, etc.). Special education techniques are still needed in order to assist the child in the learning process with attention and praise from the adult frequent but not as contingent as before. One learning disabled youngster of 13 who entered the music therapy program at this level was interested in drums and, in fact, had studied several years with a drum instructor on the Settlement faculty. The instructor had done all he could with the child who was unable to read drum notation from the drum books.

The music therapist began with short patterns of very large notation and gradually reduced the size of the visual cues as the amount of material viewed at one time was extended. The child was trained to respond to notation which gradually approximated that of a normal drum book. We hope that at the end of the year he will be able to work with material which a regular instructor could construct for him with little difficulty.

The final level, Level I is one in which the structure becomes more like a regular lesson. Here more of the traditional techniques of teaching the particular instrument are used. Social praise is important, as it is for any child, but the frequency of it may not need to be as high as in the previous level. Often this child can be referred to another teacher and do rather well. If the child stays with us, as some do who have been with us for a period of years, it is usually due to the positive relationship developed between the child and the music therapist. This then is a decision of the child and/or his parents. The youngster will maintain a fairly high response level but, from time to time, the setting of certain objectives with the child

and the use of contingency management procedures will aid in motivating him to reach a higher degree of his potential. This is the case with one 13 year old boy who has been with me for several years. From time to time we introduce a special procedure to increase his motivation to accept responsibility for preparing his music at home and working at the same material over a period of time. He, for one, is extremely responsive to earning the opportunity to give a "private recital" for his family and a few selected friends. Since his skill in piano is one of the few real skills he has, he seems most anxious to demonstrate this to those who mean a great deal to him.

Again, the description of these "levels" at which program and the needs of learning disabled children meet is certainly not all-inclusive. The references to techniques used in the music therapy setting to reach learning and behavioral objectives are brief and over-simplified as they have to be in such a presentation. However, we do appreciate the opportunity to share what we could with you today. Drawing thoughts together in order to give a talk about learning disabilities, made us at the Settlement more aware than ever of how much more we all need to learn about this area of learning disabilities and how much more there is to learn!

References

For further information related to the general field of music therapy and to music therapy with the learning disabled:

The Journal of Music Therapy, The National Association for Music Therapy, Central Office Box 610 Lawrence, Kansas, 66044. (Also available on request: Career Brochure, Film Catalog, List of colleges and universities offering degree programs in music therapy, etc.)

Voice of the Lakes Newsletter, Great Lakes Regional Conference of the National Association for Music Therapy, Music Department, Illinois State University, Normal, Illinois 61761.

"Music In A Special Way", *CHILDREN TODAY*, Office of Child Development, U.S. Department of Health, Education, and Welfare, July-August 1973.

"What To Do With the Learning Disabled Child", *Clavier*, Giles and Kovitz, September 1973.

CHILDREN WITH LEARNING DISABILITIES: PERSPECTIVE OF A READING SPECIALIST

Ruth G. Mueller

Even though we live in an increasingly pictorially saturated world, reading ability remains a critical factor for academic and occupational success. Parents, educators and the children themselves can attest to the depth of frustration experienced when the intellectually able child fails to become an adequate reader. As the search for reading problem etiologies has achieved limited success, the search for effective remediation strategies also has achieved disappointing results. This paper traces an historical picture of the attempts to identify reading failure causality and successful remediation techniques through a discussion of representative investigations. This will be followed by diagnostic and remedial suggestions which have evolved through the author's experience.

Review of Research Trends on the Causes of Reading Failure

The rather broad category of eligibility for reading clinic enrollment generally included children with a variety of problems and symptoms. There are uncounted numbers of diagnostic studies, but unfortunately the research to date has not provided a general direction or any definitive guidelines to aid the reading specialist.

For the most part, the reading authorities have defined or assumed a definition of the reading process, and, with that as the basis, tried to provide a logical diagnostic strategy. Emphasis has usually been placed on the ability to learn sound-symbol relationships, since decoding has been seen as the first step in the reading process. Comprehension has been assumed to be an automatic product of correct pronunciation of words and appropriate intonation patterns.

One specific objective of reading researchers was to attempt

to clarify the relation between a child's symptoms and his basic learning abilities and styles of learning (Brown and Botel, 1972). Examples are reported by Huelsman and Lesiak (1968) in tracing the chronology of reading disabilities. They begin with Kussalt, 1887, who concluded that reading disability was due to damage of the left angular gyrus in right handed people. Morgan in 1896 reported that defective development of the left angular gyrus was the most likely cause of reading disabilities (Huelsman and Lesiak, 1968). The suggestion of a physical cause in the neurological system, either by trauma or defect has been prevalent throughout the research. Following the pioneer studies, Orton (1937) attributed the cause of poor reading development to faulty dominance. In 1960, Hulgren, in studying twins and their family histories, reported that reading problems were due to deviant patterns of dominance which were inherited (reported by Quadfasel and Goodglass, 1968). There are many such reviews which suggest that a lack of symmetry of right and left hemispheric functions does exist in many children with reading problems and that faulty dominance can be an inherited trait.

Smith and Carrigan (1959) also believed that reading problems were caused by physical and functional deviancies, and proposed that inadequate hormone and vitamin supplies could be the source of the problems. They therefore recommended glandular therapy.

Other disciplines followed directions unique to each area of specialization. Psychiatrists generally have analyzed reading difficulties into a set of peripheral sensory defects, while speech therapists usually attributed such problems to delayed speech development. Optometrists and some reading authorities have associated lags in perceptual development and visual discrimination or other visual defects with poor reading achievement. Psychologists and educators generally have focused on symptomatic behavior, while the medical profession has looked more at physical and neurological causalities (Quadfasel and Goodglass, 1968). And while each discipline has studied the problems from its own frame of reference, the many researchers within each field seldom agree on the causes of reading difficulties, even though they almost always report similar symptoms. One reason for the disagreement may be attributed to the probability that a symptom can result from more than one condition; that symptoms change as the child matures; and that an emotional overlay is usually present in most children with reading problems, confounding the attempts to uncover etiologies.

In the 60's, John Money (1962) said that instead of a central position emerging from interdisciplinary research, there was a profusion of small cults, each proclaiming its discovery as a cure-all, a magic panacea. The profusion and confusion of terms unique to each discipline has contributed to the chaos. There have been conflicting research results reported in both the areas of diagnosis and

intervention, since researchers have used different instruments and criteria for selection of sample and have frequently omitted relevant influencing variables, such as teacher effect on pupil learning (Brown and Botel, 1972; Money, 1962).

Furthermore, there has been little continuity in the reading research area by any discipline. Therefore, much of the research has not been based on all available information. Another factor contributing to the complexities of this research is that no sign or group of signs are exclusive to a specific group of children with learning problems. Many of the symptoms, for example, are common to children with emotional problems. Some of the special signs and characteristics can also be found in beginning readers, creating difficulties when attempting to screen young children for early detection of learning problems.

Recently, interdisciplinary research has begun to provide a more productive basis for increasing our knowledge. The studies have progressed from trying to discover the "best" method to use to the current focus on the child: how he/she perceives and interacts with her/his environment; how he/she learns, functions and develops.

A proposal by Downing (1973), based on a statement of Vernon's (1957), suggested that many children who have not learned to read are victims of what he calls "cognitive confusion" — that these children have failed to develop an understanding of what reading is, the purpose for reading, and the relationship between learning to recognize symbols that "say" *a, i,* and *o* and the message from the author. While Downing's data have not yet been substantiated, a study reported by Meltzer and Herse (1969) and the ongoing research by Mueller and Zollinger suggests that there is a wide variation among young readers' perception of a word and in their understanding of graphic representation of the basic unit of reading, the word.

Another trend of the more recent research is the study of learning modalities which assumes that learning to read depends on the efficiency of the perceptual channels through which learning takes place. The belief is that children who fail to learn to read up to their expectancy level may have a deficiency in the ability to profit from instructional input in one or more of the sensory channels. Again, the results of the investigations have been contradictory. Beery (1967) believed that there are patterns of attention to auditory and visual stimuli exhibited by children with learning disabilities that are different from those of the average reader. But investigations by Myers and Hammill (1969) found that many of the children in their samples appeared to be deficient only when presented with a stimulus involving one distinct modality. They proposed that perhaps instruction should be planned to involve a combination of modalities, such as auditory-vocal, auditory-motor, or visual-vocal, for example. This strategy would combine learning through a strong and a weak

modality or perhaps two strong or two weak modalities. One advantage of this technique might be that the child's attention would be more sharply focused on the feedback from his/her reading. A characteristic of many poor readers is that they frequently fail to actively monitor the output of their reading; they tend not to show awareness of their reading production.

In summary, reading research concerning children with reading deficits has progressed through stages of interest centering primarily on the physical, neurological and perceptual influences on learning. Currently language differences are receiving much attention, but many of the more parochial trends continues to be present, although more interdisciplinary approaches are being attempted. Each researcher has assumed a definition of the reading process and has attempted to describe one or more deficits in terms of this belief about reading and learning to read.

Analysis of Remedial Trends

The logical relationship between research results and remedial programs has been evident in that remedial strategies have conformed generally to the assumptions and positions described as dominant research trends. Educators have traveled through the phases of laterality training, corrective vision programs, perceptual remediation and, more currently, prescription of medication (Brown and Botel, 1972). Another consistent assumption has been that whatever strategy is chosen, more of it is bound to be beneficial. Phonics training is a prime example.

Perhaps there has also been a relationship between the researchers' attempts to identify and describe deficits exhibited by these children and the ubiquitous attempts to strengthen the weaknesses diagnosed. This process has resulted in an emphasis in instruction which centered on the children's deficits and generally ignored those strengths which the children possessed. While most reading authorities emphasized that both strengths and weaknesses of the children should be identified and considered when planning remediation, the most consistent advice on using a "strengths approach" was to identify the child's interests and choose suitable materials to increase motivation (Brown and Botel, 1972).

Very few authorities have evaluated the results of those attempts which capitalized on a child's strong learning assets rather than concentration on upgrading the child's deficits. A typical example is the use of the results of auditory discrimination tests. This kind of test has been included regularly in the battery of diagnostic instruments administered to children with reading problems. A survey of the major professional texts revealed that most recommendations included only strategies for increasing the child's awareness of and ability to differentiate sounds. Suggestions made to

strengthen the auditory learning modality included listening to recorded sounds; identifying same and different sounds made by listening to moving containers filled with hard objects, such as tacks and paper clips; and by helping children to recognize sound patterns of language units through the use of poetry. There were no research data that supported these strategies as having positive influences toward increasing auditory ability or reading achievement.

Another characteristic prevalent in most remedial programs has been the attempts to fractionalize the reading process into what is called "basic skills." This approach to remedial (and developmental) reading instruction assumed that once the child has mastered these skills taught in isolation, the child would somehow synthesize the skills and would be able to apply them in reading. The ability to synthesize skills and/or knowledge and to be able to apply them in a different situation is one of the higher levels of cognitive skills and perhaps the most difficult way for a child to learn.

Many of the evaluations of remedial programs comparing methods of remedial instruction with other activities, such as visual or perceptual training, usually either found no differences between strategies chosen, or found that reading instruction may be more productive for increasing achievement than visual or perceptual training (Brown and Botel, 1972). In a large number of studies, the length of the experiments and other methodological problems make the results generally inconclusive. Relevant variables, such as teacher effectiveness, the Hawthorne effect, and inappropriate statistical procedures, characterize many studies. The most successful remediation usually occurs when pupils with reading problems receive help early. But in most cases remediation must continue for several years. Some pupils require periodic instruction from a specialist on a continuous basis, even after they achieve grade level, or they tend to regress (Balow, 1965). Maturational development appears to be a positive factor when the child receives help early in his school program (Muehl and Forrell, 1973). Early identification also helps to prevent the detrimental emotional effects which usually occur when a child is allowed to be in the frustrational failure situation, such as a classroom in which he/she experiences little success (Eisenberg, 1966).

Perhaps the basic flaw in the research has been the assumptions held concerning the process of reading. Research based on the psycholinguistic assumptions of the reading process has demonstrated that the reading act requires the reader to use her/his knowledge of the structure of language as well as the content of the message in order to be reading with understanding. The use of these language factors, even in limited form, would facilitate learning to read, because the reader's knowledge of grammatical patterns gives the reader a framework that makes it possible to eliminate many

responses which may be possible but not probable. For example, a plural subject requires a plural verb form; a *ball* may be *hit*, but is not usually *bit*. Such instruction represents more nearly the reading process, providing a greater possibility for transfer of learning (Burke, 1972).

As was the case in the summary of diagnostic research, there is virtually no definitive evidence on which to base remedial programs, so there is also relatively little information to guide the reading specialist in the use of diagnostic data when planning remedial strategies.

Recommendations

Because there is no general agreement among reading authorities as to the definition of reading, and there is little conclusive research evidence, a wide variety of diagnostic and remedial techniques are in use. Results of a battery of diagnostic tests administered to a child do not indicate to the reading specialist which instructional strategies may be successful. They only indicate the child's functional level on those variables tested. The recommendations presented here are intended to provide a framework within which a teacher can research logical instructional decisions.

The position of the author is that reading specialists should restrict testing to a minimum, and instead maximize the use of interpretation of diagnostic information and gather observational data effectively regarding a pupil's test and learning behavior. The initial testing results should be used to determine whether additional testing, or perhaps an interdisciplinary diagnostic team should be utilized. The diagnostic results should be synthesized and used to plan the initial direction of the remedial instruction. But, as additional observational data are collected and as the pupil progresses, changes in strategy are likely to be indicated. The diagnostic information can be categorized into three main areas: abilities, skills, and affective influences on learning. In the area of abilities, assessment should be made regarding the pupil's learning potential; auditory ability, including acuity, memory and discrimination; and visual ability, acuity, eye coordination and memory. Special areas of evaluation that may be indicated from the preliminary testing procedure and available background data are language deficit assessments and perceptual coordination testing. Knowledge of reading skills can be gained through the administration of the Reading Miscue Inventory (Goodman and Burke, 1972), which provides a qualitative analysis of the pupil's reading errors and reveals which reading strategies the pupil utilizes as he/she reads orally. It is also helpful to assess the pupil's phonetic spelling skills to ascertain to what degree the child is able to apply phonics knowledge. The affective investigation can include the determination of the pupil's interests to help select

instructional content. It should also include attempts to discover the child's attitude toward reading, strength of self-concept and screening for emotional stability.

From these data, the diagnosticians can hypothesize the means by which the child can learn most easily and which strategies the child uses when she/he reads orally. The opposite should also be evident: which learning abilities are hindrances to learning and which skills have not as yet been mastered. It is the author's position that concentration on the child's weaknesses, abilities or skills, is not the most effective method of instruction and indeed is frustrating for the pupil, requiring him/her to extend great effort and time trying to respond in ways, which, for the child, are the least productive and efficient. By capitalizing on the pupil's strengths for learning and on the skills the child possesses, a more positive climate can be fostered and more progress is likely to be obtained. Weaknesses can be upgraded through strengths. While authorities have consistently advised reading specialists to diagnose a child's strengths and weaknesses, a review of their remedial recommendations finds few descriptions of strategies for building on the remedial reader's strengths. This position is supported by Brown and Botel (1972). In addition, the profiles of scores constructed to portray a graphic picture of the pupil's performance reinforce the remedial instructor's tendency to concentrate on bringing those abilities and skills up to the level of the strengths. As far as skills are concerned, this indeed is the ultimate objective for those skills required for efficient reading. But this direct attack upon the pupil's weakest skills may be the least profitable strategy.

The fostering of a positive learning climate and providing for concrete evidence of the child's progress can create the opportunity for strengthening a child's self-concept and attitude toward reading. There is no evidence that enhancing a learning ability, such as visual or auditory modality learning styles, can be achieved or is necessary for learning to read effectively. Rather, it may be more efficient to structure the teaching toward the child's strong modality style. When the question of whether to strengthen reading skills is considered, the issue of one's definition of reading becomes critical. Reading mastery has been measured usually as the ability to demonstrate knowledge of sound/symbol relationships, since reading has been understood to be the process of sequential identification of words, with comprehension being a parallel automatic process. Therefore, reading achievement has been measured by fractionating the reading process into the components of phonics knowledge, sight word identification, vocabulary knowledge and literal comprehension. This view of the reading process omits consideration of language in relation to reading, as well as assumes that the reading process can be divided into a set of subskills which together represent the act of

reading. This position toward reading is not substantiated by Goodman (1973), whose research demonstrates that even very young readers use their knowledge of language when they read. For example, they are more successful at "decoding" by relying on syntax and context than spelling. The reading weaknesses, then, should be ascertained and remediated within the framework of the total act of reading — analyzing which strategies the reader uses and strengthening those useful strategies which effective readers use (Goodman and Burke, 1972).

In order to capitalize on the child's strengths, the author recommends that when a child is strong on auditory test items, the remedial instruction should strike a balance between oral reading and phonics instruction based on the child's errors, following but not interrupting the child's reading. Often a tape recorder can be used to good advantage. If a child shows strong visual learning strengths, instruction using linguistic materials which contain regular spelling patterns should be used. All reading instruction should provide frequent uninterrupted reading experiences for the child, so that the child is allowed to apply independently the skills which she/he is developing. By requiring a reader to read without assistance periodically, conditions for fostering independence and strengthening of strategies are created. Consistent pronunciation of words for the child or use of "mini" instructional techniques for word attack enhance the child's dependency on the teacher and create undue emphasis on word pronunciation, as opposed to comprehension. When the child encounters an unknown word, he can be taught to silently read to the end of the sentence and then reread the sentence to see if the context has provided sufficient information to identify the problem word. If the word is still unknown, the child should be instructed to substitute a word that makes sense in relation to the context. The unknown word can be noted and taught at another time. This strategy stresses that the goal of reading is to understand an author's message.

Before teaching a word which the pupil previously has been unable to identify, the instructor should attempt to analyze the cause of the problem. For example, when a word like *which* is the problem, it is necessary to know whether the child does not recognize the *wh* or *ch* spelling patterns, or if the manner in which the word is used in a sentence has created the difficulty. If the child expects *which* to indicate a question, the use of the word as a relative pronoun may create confusion for the child. *Which* and *that* as relative pronouns are usually interchangeable and constitute a different quality of error than a word which has a consistent function in the language.

According to Goodman, reading consists of the phonemic-graphemic cues in a passage, the meaning of the message, and the

syntactical structure of the passage. For example, if a reader reads "The door of the *horse* is open" instead of "The door of the house is open," he/she is probably relying more on the phonemic-graphemic cues available; while the reader who reads "The door of the *cabin* is open," is relying more heavily on the intended meaning of the statement. This view of reading stresses that the reader actively reconstructs meaning from the cues available in a process of analysis by synthesis of the data. To improve a reader's performance then, reading instruction should be structured to allow the child to process the available cues in as normal a situation as possible, helping the child to learn to use the three cues systems of meaning, syntax and phonics.

Through the instructional emphasis on the child's strengths, some of the negative affect about reading which characterizes most remedial readers can be ameliorated. The use of materials matched to the child's interest areas augment this process. There is evidence that poor readers can read more difficult materials when the reading conforms to their interests. Perhaps their motivation to read increases their willingness to struggle and persevere or maybe they bring more information to the interest-centered passage.

Another strategy that can facilitate a remedial reader's progress is to provide the child with concrete evidence of his progress. No amount of encouragement or warmth by an instructor is as effective as the demonstration through graphs, growing word banks or an expanding notebook of exercises that the child is succeeding. An additional useful feedback strategy is the use of a tape recorder, periodically recording the child's reading, and playing the tape for the child at a later date as the child follows with silent reading.

In summary, all reading instruction should recognize that reading is a language-related process that cannot be separated into a set of subskills without distorting the process, and thus making progress for the child more difficult. By planning the remediation to capitalize on the child's strengths in learning and abilities as well as interests, remediation should be successful as well as less frustrating for the child.

References

Balow, B. The long term effect of remedial reading. *The reading teacher*, 1965, *18*, 581-86.

Beery, J. Matching of auditory and visual stimuli by average and retarded readers. *Child development*, 1967, *38*.

Birch, H. In J. Money (ed.), *Reading disability: progress and research needs in dyslexia.* Baltimore, Md.: Johns Hopkins Press, 1962.

Brown, V. and Botel, M. *Dyslexia: definition or treatment.* Bloomington, Ind.: ERIC/CRIER, Indiana University, 1972.

Burke, C. The language process: systems or systematic? In R. E. Hodges and E. H. Rudorf (ed.), *Language and learning to read.* N.Y.: Houghton Mifflin, 1972.

Downing, J. A summary of evidence related to the cognitive clarity theory of reading. *Twenty-second yearbook of national reading conference,* I, 1973.

Eisenberg, L. The epidemiology of reading retardation and a program for preventive intervention. In J. Money (ed.), *Disabled reader.* Baltimore, Md.: Johns Hopkins Press, 1966.

Goodman, K. Theoretically based studies of patterns of miscues in oral reading performance. *USOE Final Report,* Project No. 9-0375, 1973.

Goodman, Y. and Burke, C. *Reading miscues inventory manual.* N.Y.: Macmillan Co., 1972.

Huelsman, C. and Lesiak, J. Research guidelines. *Ohio Reading Teacher,* 1968, *4.* Ohio Council International Reading Assn.

Knudsen, Hermann. *Reading disability.* Copenhagen, Denmark: Munkegaard, 1959.

Meltzer, N. and Herse, R. Boundaries of written words in context as seen by first graders. *Journal of reading behavior,* 1969, *1.*

Money, J. *Reading disability: progress and research needs in dyslexia.* Baltimore, Md.: Johns Hopkins Press, 1962.

Muehl, S. and Forrell, E. A followup study of disabled readers: variables related to high school reading performance. *Reading research quarterly,* 1973, *9.*

Mueller, R. and Zollinger, R. Investigation of the relationship of linguistic awareness of pre-literate first grade readers and subsequent reading achievement. (in progress)

Myers, P. and Hammill, D. *Methods for learning disorders.* N.Y.: John Wiley and Sons, 1969.

Orton, S. *Reading, writing and speech problems in children.* N.Y.: W. H. Norton, 1937.

Quadfasel, F. and Goodglass, H. Specific reading disability and

other specific disabilities. *Journal of learning disabilities*, 1968, *1*.

Smith, E. and Carrigan, P. *The nature of reading disability*. N.Y.: Harcourt, Brace and Co., 1959.

Vernon, M. *Backwardness in reading*. London: Cambridge University Press, 1957.

LEARNING DISABILITIES — A SPEECH PATHOLOGIST'S PERSPECTIVE

Primo V. Del Calzo

Why would you have a speech pathologist speaking in a colloquium series on learning disabilities? When you think about learning, you usually think about academic areas; that learning takes place in a formal process in the schools and that some children do not operate too well under conditions of formal learning. But that's rather a narrow view of learning. Learning begins much earlier than the academic process. When we think about learning problems, we should think about problems that occur not only in the academic setting but problems that also occur pre-academically; problems that not only occur in school, but also at home, in the community, and even after a person leaves the academic setting.

I suppose if you think about a learning disability as being an inability to function in certain cognitive areas, or to learn certain reasoning processes which are out of keeping with general ability, then, maybe, it is appropriate to say that a person, even in more advanced years, who given certain information or a system of rules has difficulty making assumptions and generalizations or figuring out rules for the manipulation of information, does indeed have some kind of a learning problem.

My background was speech and hearing therapy with the preponderance of my experiences being in the public school setting. It wasn't too long after I was in the schools that I began getting some uneasy feelings about some of the children that I was dealing with. These were children that I found through various screening programs, or children who were referred to me by classroom teachers. It was my responsibility to deal with these children and their problems. With some of them, it was difficult to come to grips with the specific nature of the problem. These children frequently had difficulty in the academic setting, yet it was hard to pinpoint the problem and their needs. You soon began to realize that you didn't know enough about what was going on. You knew there was a problem. You tried

to deal with it, but unless you had a good scheme for dealing with that problem you really felt like you were wasting your time. You were picking here and jabbing there, but not coming up with anything that was really concrete, that really made you feel good about what you were doing.

Just before I left Western Reserve with an undergraduate degree, the Cleveland Hearing and Speech Center was engaged in an interesting project led by Dr. Nancy Wood in which she was looking at what was then called aphasic children. That seemed to be something fairly interesting, but at the time, because I was not a graduate student, I really didn't get too involved in what she was doing. However, I had an opportunity to observe that program and I recall wondering why they chose to do some of the things they were doing. A lot of the children in this childhood aphasia program were engaged in activities which did not superficially seem to be related to "speech problems." They were working on attending behavior, reducing perseverative responses, not only verbal responses but also perseverative motor responses. They were working not only on auditory perception, but also on visual perception. They were in essence dealing with a whole gamut of problems that seemed interesting and fascinating, but did not fall into the then traditional concept of what constituted a speech problem or speech therapy.

I was soon to find that in the public schools, I frequently encountered children or had children referred to me because of a suspected hearing problem. The teacher would often say, "Johnny can't hear." Upon testing hearing, Johnny frequently passed the screening test or if he failed the screening test, he later passed the hearing threshold test. Essentially, the child was found to have good hearing; that is, his hearing acuity was normal and yet, his behavior would indicate to the teacher that the child was not really listening.

Children, of course, were and are screened not only for hearing problems but also for speech problems in which we were looking essentially for their ability to produce the sounds of the language by naming pictures. In addition to that, we also identified children that had stuttering or dysfluencies in their speech, including hesitations, repetitions, prolongations; children that had voice problems in which their voices were hoarse, whispered, harsh, nasal, or denasal. The frequency of these problems identified in this manner were, of course, sufficient to make up a clinical case load. However, interestingly enough, sometime within the semester we'd start getting referrals from the classroom teacher. "Are you sure you really checked Jimmy? He has a speech problem." So we'd go and look through our records and sure enough, we had checked Jimmy and he was all right. If we then re-tested him on the same test that we had previously given, frequently again he seemed all right. It was only when we really began to listen to the child over a period of time

or got a sufficiently large sample of his speech beyond his naming of 25 or 30 pictures, or body parts, or counting to ten or twenty, or asking him to briefly respond to some questions, that we began picking up oddities in the child's speech production. These were things that the classroom teacher was observing, and that the speech therapist was not always picking up.

How do you resolve this kind of a situation? What should we be looking for in the child's behavior; and having found it, what should we do about it? Over the past decade a considerable amount of time and energy has been addressed to resolving this situation. Over the past few years, the orientation of the research and training programs and the information and techniques being developed were getting closer to some of the answers to the problems that were encountered in the public schools. The orientation had expanded, in essence, to include the broad scope of language ability — not just speech, the sound system and production characteristics of the child; but that total system which constitutes language for comprehension and expression. So I found that as a speech pathologist I could not function without a working knowledge of psycholinguistics, linguistics, language development in children, and learning and behavior modification. Speech pathologists in the field as well as students in professional training today, are learning not only about language acquisition and the process of language development and its disorders, but also about the nature of language itself, its phonology or sound system, its grammatical or syntactical system, its semantics, its rules for learning, and its rules for comprehension and usage. Much of this information is related to children that are pre-schoolers. Now, I don't know how many of you in the audience are interested in preschool children, however, this information is essentially applicable to both school age and preschool children. At first glance, it seems that this information is relevant for a two-year-old, a three-year-old, or perhaps even a four-year-old child who is having difficulty. But would you really run into children with these kinds of learning disorders relative to language, comprehension, and usage in the school setting? In essence, the answer to this question is in the affirmative. Consequently, the information relative to early language development, the rules that are used at the phonological, syntactical, and semantic levels, and the psycholinguistic abilities that are called for in dealing with language such as discrimination, sequencing ability, memory functions, and so forth give us a great deal of information that is useful in dealing with various children having difficulty learning in the academic setting.

In the preschool years, the primary vehicle for learning is through language. In the early elementary years, I think that language still remains a very vital process. Once the child begins to learn to read, there is a shift from verbal oral communication and

learning by ear and mouth, to visual and written communication and learning. I think that the whole area of learning disabilities probably sprang from the fact that we have many children in the academic setting that are having difficulty with reading. And it was failure in the academic setting that really brought the whole area of learning disabilities into prominence. But we must remember that even at the preschool level, we have various problems and I think that the one area that we're beginning to see a great many problems in, is in the child's ability to pick up the language code by ear. If the child has difficulty picking up the language code by ear, he will probably have difficulty picking up the language code through the eye or the visual system; that is, he will have difficulty with reading and perhaps with writing.

I would assume that because of the representation in the audience, it would probably not be advisable for me to go through, in any great detail, the various stages of the acquisition of the language code on the part of the child from one year of age through about six years when he enters the academic setting. But, you know, the child has to acquire during this period of time, the sound system of his language culture; that is, the phonological system and the rules that apply to this sound system. He has to not only learn the various sounds employed by his language culture; but he has to learn also, the permissible sound combinations of that culture. He has to be able to discriminate between them, and he has to be able to use them or produce them. Having acquired this ability, the child can later in the academic setting learn phonics or the system of relating speech sounds to specific letters or letter combinations. The child also has to pick up the rules governing the syntactic level; that is, the rules that relate one symbol to another symbol, which allow for the creation of morphemes or words, and the permissible sequences of words which constitute grammatical sentences. He also has to pick up those rules that govern the semantics or meaning of utterances and are involved with the development of the vocabulary of the language. Having acquired the auditory-vocal language system, the child can then superimpose upon it the visual motor language system.

When we have children that are essentially not producing or not demonstrating language ability, the speech pathologist would have to ask a number of very important questions relative to that child. One that could be asked first and perhaps most easily dispensed with is, whether the child is exposed to the language of his culture. Does he have the models available to him so that he can learn the language code? It's probably pretty rare that we'd run into children that don't have adequate language stimulation available to them so as to pick up the language code.

Not too long ago, it was not uncommon for speech pathologists to advise parents to be sure to stimulate their children with

speech, and to give the child sufficient opportunity and encouragement to talk. The feeling being that it was very important for the child to engage actively in a process of communication with the parent, and that the child be provided with a great deal of language stimulation in order for him to learn. I think that the feeling now is that the demand or requirement for excessive language stimulation is not that vital. In most instances, the child really doesn't need an awful lot of language stimulation to be able to pick up the rules. He's so primed and ready for them that if they are there, chances are, excluding any other type of problem, he'll pick them up and move with them. In some cases when children are institutionalized or children are kept in a state of isolation or are psychologically abused, I think we can really say the child comes from an environment which is not promoting the establishment of language.

If the environment essentially provides him with the kinds of language models that he needs, the next question would be, "Does this child have the capacity to take this information in?" What we are primarily interested in is the ear or the auditory receptor process for taking the information in. But we can't exclude the other avenues for processing information because it's also vital for the child to have adequate visual processing. Visual processing provides a great many cues on what the language is all about. But essentially, the speech pathologist would be concerned with the ear and the patency of that system. Does he have good hearing acuity? The speech pathologist and the audiologist have a whole host of tests and techniques that are employed to determine the effectiveness of the auditory receptor processes for taking in information. It's really quite sophisticated considering the degree and extent to which problems can be identified and located in the various stages of the processing mechanism. And once these kinds of determinations are made various steps and procedures can be instituted to correct or compensate for some of the deficiencies in the receptor mechanism. In some instances where you have a child who has no functional hearing or a reduced ability to hear, there is, of course, a reliance on the visual system to augment the deficiency in the auditory system. So there is this other channel that can become very vital for children that aren't processing information by ear.

However, getting back to a statement I made previously, it is not unusual to find children that can hear, have adequate acuity, know the various sounds present in the environment, but have problems in dealing with that information adequately and appropriately once it's inside. And here we have a wide range of possibilities for other kinds of processing break-downs which can occur. This calls for considerable skill on the part of the speech pathologist or whoever it is that's responsible for treating the child. Determination must be made as to which processes are breaking down, in order to

try to compensate for those break-downs. An attempt must be made to try to circumvent or augment these processes; to change the stimulus input parameters; to help the child structure the information as it's coming in, because, for some reason, he is not able to deal with it through his own mechanism or the way he is using it.

Generally, what are some of the problems that the child can run into? Well, I think that one of them, a very basic one, would be that the child has to be assisted to make a determination that he is going to zero in on certain types of stimuli. He has to be able to select or choose and he also has to be able to exclude or eliminate (frequently with assistance) other stimuli. Obviously, if we're talking about children with learning disabilities, we're well aware of the fact that some of these children do not have the capacity to select certain types of stimuli and to exclude others. The child is bound to whatever stimulus is present and seems not to be able to set up a hierarchy or a priority system for dealing with information that's coming in. If the child can't establish priorities, or if he establishes priorities and they keep shifting, he is not going to be able to deal with the incoming information. Most information that we have to deal with in any kind of a cognitive process or learning situation means being able to follow that information through time, to deal with it sequentially as it occurs through time, and to maintain the integrity of that information through time. If the child isn't able to maintain these attention, selection, and tracking behaviors, he is going to have difficulty processing that information and getting meaning out of it. He has to be able to hold the sequence of information appropriately in short-term memory. He then has to be able to make some kind of a match between what it is he is holding in short-term memory, against previous information stored in long-term memory, seeing similarities in the information coming in versus old established information. Are there matches made between new and old, or is this totally new information? Can this bit of information be categorized with other information even though it's not exactly the same? Does it need a new category all it's own? What are the relationships between the categories? All of these processes, it would seem, would have to go on not just in the auditory system, but also in the visual system or in any kind of system for taking in information as it relates to language and learning.

What are the implications if the child does not have the ability to do this? What is the responsibility for the person that is dealing with the child's problems? Obviously, it would be to try to enhance and maintain the child's attention; to build up the number of units or the bits of information that the child is able to contend with at one time; to expand those bits, and to maintain the appropriate order or sequence of those bits of information; and to establish categories and rules of relationship between categories. There

are various other processes that are involved which are even more difficult to deal with, even difficult to describe except perhaps conceptually — things such as motivation. Is the child really motivated to pick up this process and to follow it? What's in it for him to expend all this effort and energy to follow this information over time, to try to hang onto it and to get some meaningfulness out of it?

Assuming that the child has the ability to track the information, to store it, to categorize it, he then probably goes through some kind of process of building up rules for dealing with various kinds of information. He categorizes in a certain way, making relationships between the information he takes in. The categories can be linguistic or they can be non-linguistic. I think that in all probability, we have certain rules for dealing with our observations, whether or not we have linguistic terms we attach to them. A drop in the temperature, coupled with a building up of dark, rolling clouds in the sky has certain meaning for us. Based upon our past experience we have certain rules and ways of categorizing that cluster of information. Maybe that's fairly concrete information; it's symbolic, perhaps not too exotic. But if we desire, we can attach linguistic notations to those kinds of events and we can become very exotic in our dealing with something like the weather. Maybe, even to the point where we can write poetry about the weather and exercise all kinds of poetic license about what we're saying about the weather.

I now want to move to the linguistic process, yet to some extent I don't want to completely leave what I was talking about without stressing to you that if a child is having difficulty with attending, if a child is not able to sequence, if he is not able to hold in his memory span the bits of information that are presented to him, and you want to move up to this next stage, you probably are not going to have much success with it because these are the prerequisite, essential behaviors that the child has to be able to execute in order to move up to the next stage. Therefore, you are going to have to contrive in your dealings with the child to control and manipulate his educational or therapeutic environment and the materials which you present to him. You may need to control, manipulate, or alter the stimuli presented as well as its dimensions (intensity, duration, and frequency) in order to get him to deal with these more adequately.

What are some of the options available to you with respect to auditory stimuli? One is, perhaps, to increase the loudness or the intensity of the stimuli so that you are going to get his attention. He may have no choice but to respond. You can also make the stimulus longer so that it lasts or increases its duration in time. Thus he has a longer opportunity to identify and take in that bit of information. Sometimes this is difficult depending on the type of stimuli you are using. It's especially difficult when you're dealing with speech stimuli

because speech is an instantaneous presentation. Speech is very rapid, ongoing, and fleeting. It's there and then it's gone. I guess the remarkable thing is that children pick it up so easily, so well. But you can to some extent increase the duration of the stimuli that you're presenting. In some respects you have to be careful because sometimes increasing the duration of speech stimuli introduces distortion. If you increase it beyond certain limits, it is no longer what it is supposed to be. You can, however, increase the frequency of the presentation, giving as many presentations as needed.

With a child that is very distractible, you probably want to be very certain that the stimulus is presented pretty much in an isolated manner, away from other distracting stimuli. We have seen more and more in the special academic setting the use of little "offices" or learning carrels in which the child sits so that he is less distracted by non-relevant visual and auditory stimuli. We also have in many schools children sitting with earphones on following specific directions or working on various auditory processing tasks where they hear only what is on specially prepared tapes. They don't hear the noise that is in the environment or the teacher talking to some other child who is working on another task. So there is a lot that can be done to work with problems children have with respect to distractibility.

Some of the other problems that the child may have are a little more difficult to deal with. For instance, if you consider the type of distractibility which is internal rather than external, the child who is distracted by his inner processes or thoughts poses a more difficult problem. You can't shut thoughts off from the outside. They have to be dealt with on the inside. However, there are various things that can be done to structure the information that you are giving to the child, and to monitor his behavior as he is dealing with it so that you can tell whether the child has left the task or if he is still engaged. Then through techniques of reinforcement, you can insure that the child's attention is maintained in a more efficient manner.

Assuming the child has the ability to attend to and process the incoming information and to establish it in a memory system following rules of categorization and relationships between categories, he now is able to develop concepts about what is going on in his environment. Having established these concepts about what the world is all about, he can then begin to attach linguistic notations to these concepts. If the child has a very limited conceptual ability, he would probably have a correspondingly limited language. That isn't to say that, for instance, a child who is retarded may not develop basic essentials for language. However, the total output especially with respect to vocabulary, may be very reduced because he has no need for extensive linguistic labels since his conceptual world is really not that extensive. We frequently talk about the mentally

retarded child as being concrete, and that his speech is concrete. Well, maybe that's only natural in that he does not have an extensive conceptual system. Why would he use a term like transportation? Truck, car, and bus are good enough to suit his needs.

If you're talking about learning disabilities, by definition you're considering children who are essentially within the normal range of intelligence. These children should have overall conceptual abilities although they will demonstrate difficulty in performing in certain areas of conceptual functioning which can usually be circumscribed through various diagnostic or observational procedures. Some children, the ones that we used to call aphasic and are now referred to more frequently as specific learning disability or language disordered, may have the ability to conceptualize fairly adequately, but they are not able to develop the rule system for language. The procedures that are presently being developed and employed to treat these children utilize much of the information that we have available with respect to language acquisition and development. This information is used to determine what the stage of development is for a particular child; that is, where he seems to fall with respect to normal language development; to determine which rules are not established, and which psycholinguistic processes seem to be deficient. We then make an attempt to manipulate the child's therapy and environment so that we can expose him not only to the rules that he has not established, but to do it in a manner that will enable him to deduce those rules. The problem is that, although he has been exposed to those rules in a traditional manner by his mother, father, siblings, and others who have talked to him all of his life, for some reason he's not able to pick up those rules.

Some of the reasons that may account for his inability to acquire rules are the processes that I have just talked about: his inability to select, attend, a very short memory span, etc. The degree to which these problems present themselves varies from child to child. Some children may have more difficulty with particular sets of language rules. That means that you have to examine the various levels of language to determine which rules are absent or deviant. For treating the child with an inability to pick up the sound system of the language we would probably be interested in trying to get him to observe or discriminate and use the features or ingredients which make up the sounds. To use a linguistic term, we try to expose him to and get him to acquire the distinctive feature contrasts of the sound system of the language both for comprehension and production. This is perhaps somewhat of a departure from what we've been doing for years in speech therapy. I think that our orientation today is somewhat different than it was 10 or 15 years ago when we tended to deal with one sound at a time, and tried to have the child discriminate that sound on a rather gross basis by contrasting it with

another sound or a variety of other sounds. Today our orientation is more specifically geared to having the child become aware of the components (distinctive features) of a particular sound. These components are relatively limited in number and in essence apply to all sounds. Once he learns these building blocks for sounds, he can utilize that information in discriminating and producing all sounds. So I think that in many instances when it comes to speech therapy or articulation therapy which deals with the phonological system, we are not depending solely on ear training in a rather gross manner. We are now looking at the child's system of combining features to make up sounds to determine which features are not being employed in comprehension and production. It thus becomes possible to work with more than one sound at a time.

Another component of language which may require attention is the syntactic level. Here we work at getting the child to learn the rules that relate one meaningful linguistic unit to another meaningful unit. This incorporates the grammatical rules for structuring phrases and the morphological rules including inflectional endings that are attached to certain words to signify things like possession, tense, etc. The syntactic level can also be dealt with by structuring the presentation of information in therapy, so that the child can deduce these rules more easily. The expansion of rules follows the progression involved in the normal acquisition process. Some children may also need work on the semantic level to expand vocabulary comprehension and usage. These reflect some of the processes that the child has to be able to deal with in order to come up with adequate language behavior. There are a few other stages that would have to be considered, since we could have a child who may have a perfectly good comprehension of what language is, and is able to formulate a response, but has difficulty in getting that response out due to various neuromotor problems and various structural problems. These aspects would have to be dealt with also.

In concluding I would say that many interesting and exciting things have been happening with respect to treating language and learning disordered children. In some respects I can't help but also conclude that even 10, 20 or more years ago speech therapists and teachers were doing good language and learning therapy. They were in essence teaching all of these rules. Today we are using different terms to label and describe levels and processes. I think our present approaches are more helpful to us as professionals and to the children we serve. When we have children that are not functioning well either preacademically or academically, the speech pathologist has a much better rationale, a much better guide book, if you will, for looking at various levels of behavior: language behavior as well as psycholinguistic processing behaviors. We have available fairly sophisticated observational procedures as well as some pretty fair

diagnostic tools that can be used to evaluate performance and give direction for remediation.

I would also conclude from some of my experiences that there often occurs with the learning disabled child a need to look at more behaviors and to analyze more competencies then we can normally hope to do within the scope of a single discipline. I have the pleasure this semester of teaching an interdisciplinary course on *Problems Of Mental Development*. It really demonstrated to me once again in bold relief the fact that the speech pathologist really needs information relative not only to the child's cognitive and learning behavior but also to his emotional status. One can function much more proficiently as a speech pathologist if one has information on the child's home setting and what kind of assistance he can expect from the parents. This kind of information, as you know, is best gathered by someone like the social worker who is really adept at not only getting information but even guiding and managing the home environment. It also is extremely vital to get good information on the child's medical background and his present medical condition. We need very urgently to get together with these other disciplines that will probably be dealing with the child at some point in time or another. It's so much more valuable for a group of professionals to work together on a child's problems enabling a more unified and comprehensive program.

Suggested Readings

Dale, P. *Language development*. New York: Dryden Press Inc., 1972.

Eisenson, J. *Aphasia In children*. New York: Harper & Row, 1972.

Hopper, R. & Naremore, R. *Children's speech*. New York: Harper & Row, 1973.

Irwin, J. & Marge, M. *Principles of childhood language disabilities*. Englewood Cliffs: Prentice-Hall, Inc., 1972.

Johnson, D. & Myklebust, H. *Learning disabilities*. New York: Grune & Stratton, 1967.

Menyuk, P. *The acquisition and development of language*. Englewood Cliffs: Prentice-Hall, Inc., 1971.

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